5.0 EVALUATION OF ALTERNATIVES

5.1 Stage 1 and Stage 2 Evaluation Process

The evaluation process reflects the overall progress of the study itself, and thus evaluations are presented for Stage 1 and Stage 2. The **Stage 1** evaluation (focusing on alternatives for Yonge Street) was completed and refined throughout phases 2 and 3 of the EA study in 2016. This process is discussed in **Section 5.3**.

Based on the staff recommendations approved by the Public Works and Infrastructure Committee on May 9, 2017, the EA study scope was expanded to identify an additional preferred alternative that would add the cycling facility on Beecroft Road and/or Doris Avenue and maintain six travel lanes on Yonge Street. This expanded study is referred to as **Stage 2**. The evaluation of the Stage 2 alternatives is discussed in **Section 5.4**.

The Stage 1 preferred alternative and the Stage 2 preferred alternative were then compared and an overall preferred alternative selected. This is discussed in **Section 5.5.**

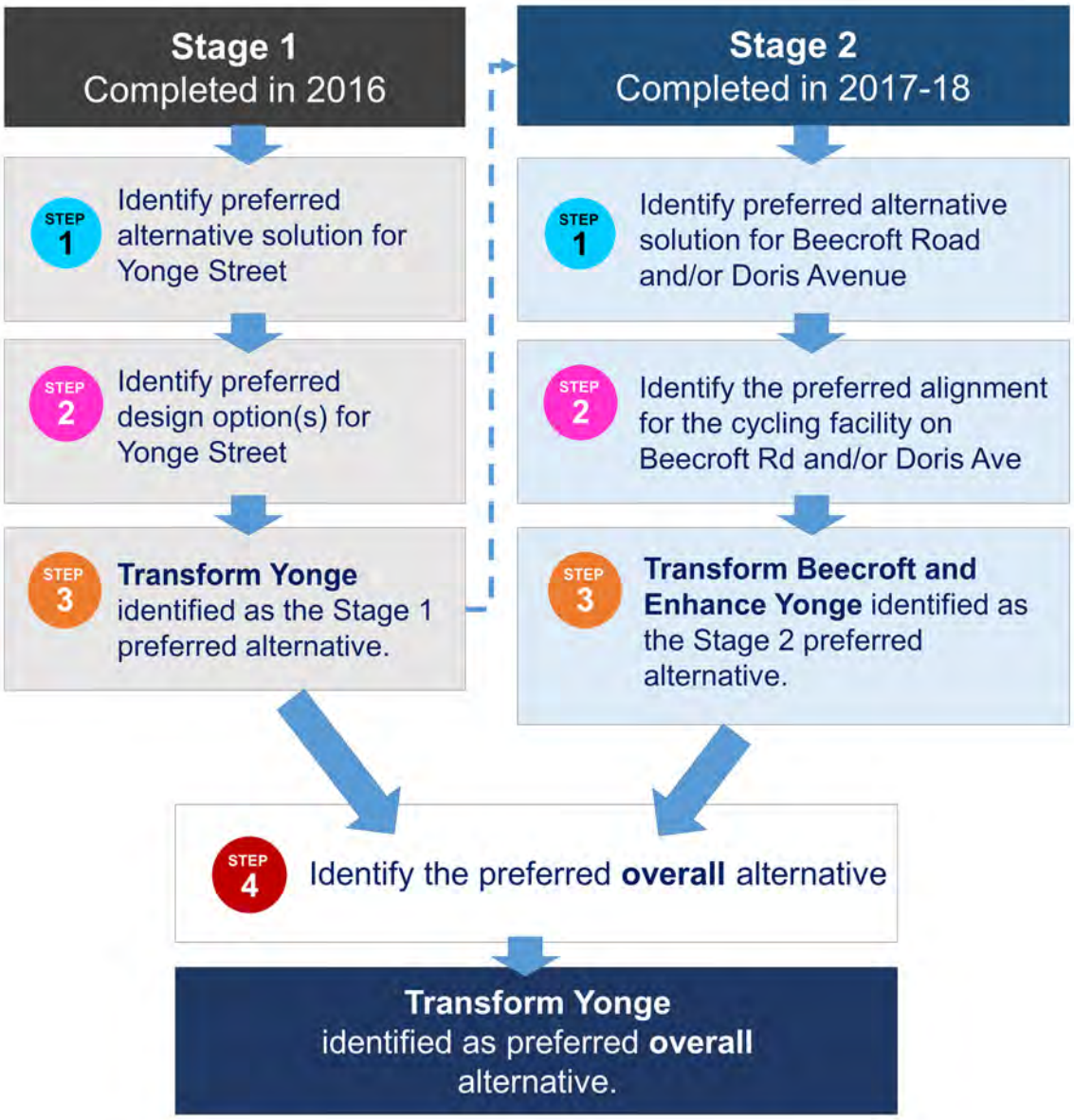
The integration of the Stage 1 and Stage 2 alternatives evaluation is summarized in **Exhibit 5-1**.

Other Planned Improvements in the Focus Study Area

Irrespective of the preferred alternative for the subject study, the City is planning for the eventual extensions of Beecroft Road, from Finch Avenue West north to Drewry Avenue, and Doris Avenue, from Sheppard Avenue East south to Tradewind Avenue, to complete the ring road system.

Planning and design for these two projects is proceeding. The extension of Doris Avenue (referred to as the Doris-Tradewind Extension) has been included in the Aimsun modelling of traffic impacts completed for this project, for the horizon of 2031. This is based on the expectation that construction of the initiatives emanating from the subject study would proceed prior to the Doris-Tradewind Extension.

Exhibit 5-1: Stage 1 and Stage 2 Evaluation Process



5.2 Evaluation Criteria

The following sections describe the generation of planning alternatives (**Section 5.1**), evaluation criteria, evaluation process and the selection of the preliminary preferred plan (**Section 5.5**).

5.2.1 Stage 1 Evaluation Criteria

Evaluation criteria were developed to assess the planning alternatives and design alternatives, and were further refined through consultation with agencies and the public. The criteria are grouped into the following factor areas:

- Planning vision and identity;
- Opportunities for design excellence;
- Long-term resilience;
- Accessibility, mobility and transportation infrastructure. This factor area focuses on access by vehicular traffic for movement of people and goods, parking, and safety;
- Cycling and walking. Given the importance of these modes in the project objectives, they were broken out from the "accessibility" factor area noted above;
- Natural environment (includes affects to street trees / landscaping);
- Cultural heritage and built heritage resources;
- Costs; and
- Constructability and utilities.

Once the factor areas were established, specific criteria for each factor were developed, as shown in **Exhibit 5-2**. These criteria were used for the assessment of the planning alternatives by assigning a performance grade of very poor, poor, good and very good based on the range from greater impact / least benefit to less impact / more benefit. The evaluation is described in more detail in the next sub-sections.

Exhibit 5-2: Stage 1 Evaluation Factors and Criteria

Category	Criteria	Definition
Long-Term Resilience	Planning horizon	Ability to adapt to evolving context in terms of mobility choices, technology, built form, economy and land use
Accessibility, Mobility and Transportation Infrastructure	City design standards and guidelines for transportation facilities	Adheres to the existing City design standards and guidelines for transportation facilities
	Accessibility	Complies with City's Accessibility Standards and guidelines, and provincial guidelines
	Movement of people and goods	Promotes the effective movement of people and goods to, from, and within the study area
	Transportation network capacity	Promotes balancing capacity for all modes throughout the transportation network in the study area, encouraging a good level of service on all routes at all times
	Parking capacity	Promotes efficient use of existing parking capacity throughout the study area

Category	Criteria	Definition
	Intersection operations and transportation efficiency	Encourages efficient transportation operations through all road intersections within the study area
	Safety	Assuming that all components will be designed in a way that is safe for all users; this is based on the comfort and perception of safety by all users including cyclists, pedestrians, vehicle and transit users
Cycling and Walking	Cycling facilities	Allows for the introduction of new cycling facilities
	Pedestrian facilities	Improves existing pedestrian facilities, in terms of a continuous, expansive pedestrian clearway network, widening, and number of signalized pedestrian crossings
	Supports sustainable transportation	Prioritizes the ability to comfortably walk, cycle or take transit within the study area
	City's Cycling Network plan	Is compatible with the City's Cycling Network plan
	Connectivity to lands adjacent to Yonge Street	Supports improved connectivity via bicycle and walking to lands adjacent to Yonge Street
Natural Environment	Vegetation	Minimizes impacts to vegetation communities and existing trees
	Sustainability	Ability to re-use materials; re-use / recycling of water
	Street tree planting / landscaping	Maximizes the opportunity for street tree planting and landscaping in optimized urban condition, providing for the long-term health of trees / landscape vegetation
Cultural Heritage and Built Heritage Resources	Built heritage resources	Minimizes the potential for adverse effects on built heritage resources in the vicinity of the study area
	Cultural heritage landscapes	Minimizes the potential for adverse effects on cultural heritage landscapes in the vicinity of the study area
	Potential archaeological resources	Minimizes the potential for adverse effects on potential archaeological resources in the vicinity of the study area

Category	Criteria	Definition
Costs	Construction costs	Balances capital costs for construction with the benefits produced in terms of livability, accessibility, travel time savings and/or capacity increases
	Maintenance / operational costs	Balances capital costs for maintenance and operation with the benefits produced in terms of livability, accessibility, travel time savings and/or capacity increases
	Life cycle costs	Considers the costs through the full life-cycle of the improvements, balancing long-term costs with the benefits produced in terms of livability, accessibility, travel time savings and/or capacity increases
Constructability and Utilities	Mobility through the study area	Encourages pedestrian, road, and bike mobility through the study area and minimizes the duration of disruption for each mode
	Construction stages	Minimizes the number and duration of construction stages
	Existing utilities	Minimizes the number and scale of existing utilities affected
	Utility conflicts	Minimizes potential utility conflicts
	Effects on business during construction	Minimizes negative effects on business in the study area during construction
Planning: Vision and Identity	Supports Yonge Street's role as a special public space	Supports cohesive vision and identity for Yonge Street from south of Sheppard Avenue to the Finch Hydro Corridor. Elements would include a consistent view corridor, as well as ample pedestrian clearway capacity for public space and amenities
	Encourages vibrant, mixed-use development	Is conducive to redevelopment of the study area. This includes alternatives that do not disrupt the logical development of parcels and that would support active ground floor spaces
	Business	Minimizes impacts to businesses in the study area, including retail, services, and food and drink establishments
	Private property	Minimizes permanent takings, temporary occupation, temporary access obstruction during construction, and permanent access closures

Category	Criteria	Definition
	Existing planning policy and environmental assessments	Compatible with planning policies, secondary plans, and environmental assessments adjacent to and within the study area
	Noise	Minimizes noise-related effects in the study area during and following construction
	Emergency services	Minimizes effects on emergency services, including access and travel times
	Wind / Pedestrian Comfort / Microclimate	Degree of impact from wind, sun, shade and any other relevant factors
Opportunities for Design Excellence	Portion of right-of-way dedicated to public realm uses	Considers the percentage of the right-of-way dedicated to public realm uses such as pedestrian facilities, public art, and street furniture
	Infrastructure and streetscape design	Supports design excellence of infrastructure and streetscape. Maximizes impact of corridor on the design of adjacent development
	Attractiveness of urban environment and place-making opportunities	Enhances the attractiveness of the urban environment and creates place-making opportunities
	Integration with public spaces	Enhances connections and integration with adjacent public spaces

5.2.2 Stage 2 Evaluation Criteria

In consultation with the Technical Advisory Committee and the Project Team, the evaluation criteria were updated prior to proceeding with Stage 2. The expanded scope of Stage 2 required consideration of a wider range of potential changes, accommodating varying functional contexts of the service roads as compared to Yonge Street, and accommodating additional information acquired through environmental investigation and expanded consultation activity (i.e. with the local business community). The criteria were reordered and simplified with minor revisions to make them more intuitive and specific. These are shown in **Exhibit 5-3**.

Exhibit 5-3: Stage 2 Evaluation Factors and Criteria

Category	Criteria	Definition
City Building	Planning: Vision for the community and community identity	• Supports planning policy and vision for North York Centre • Encourages vibrant, mixed-use development • Effects on business (e.g. retail) • Noise effects
	Opportunities for design excellence	• Supports place-making and streetscape improvements • Right-of-way space dedicated to public realm
	Constructability and utilities	• Ability to get around during construction disruption • Impacts to private property • Impact to existing utilities and ability to accommodate future utility installation
	Cultural heritage and built heritage resources	• Minimizes the potential for adverse effects on built heritage resources, cultural heritage landscapes, and potential archeological resources in the vicinity of the study area
Costs	• Capital construction cost	
	• Operations and maintenance costs	
Sustainability	Natural environment	• Impacts on vegetation communities and existing trees • Proposed street trees / landscaping • Sustainability features and ability to respond to climate change
	Long-term resilience	• Ability to adapt to evolving mobility choices, technology, and a changing economy.
Mobility and Transportation Options	Mobility and congestion management	• Movement of people and goods • Transportation network capacity and operations • Surface transit (GO Transit, York Region Transit, and Toronto Transit Commission (TTC) buses) operations • Emergency services

Category	Criteria	Definition
	Walking	• Makes walking a more attractive travel option • Connectivity for pedestrians to lands adjacent to Yonge Street
	Cycling	• Makes cycling a more attractive travel option • Consistency with City's approved Cycling Network Plan • Connectivity for cyclists to lands adjacent to Yonge Street
	Curbside activity	• Ability to accommodate pick-up, drop-off, and delivery activity
	Parking	• Adequacy and location of proposed supply of parking

5.3 Stage 1 Evaluation

5.3.1 Planning Alternatives for Yonge Street

To ensure there is reasonable and adequate justification to proceed with the improvements and that the need for the study is clearly demonstrated, the Municipal Class EA requires that alternatives be considered. The alternatives are assessed against their ability to reasonably address the identified public realm / streetscape and transportation needs and opportunities, which are documented in **Section 2.0**.

The overall decision-making process for this study was phased, beginning with the consideration of planning alternatives and narrowing progressively to the selection of a preliminary preferred design. Accordingly, the generation, evaluation and selection of alternatives was undertaken in steps which considered alternative cross section concepts and design alternatives.

Several alternatives were examined during the study to determine the best solution that meets the need and justification for the REimagining Yonge Study. The planning alternatives considered include the following and are defined in the subsections below:

- Do Nothing;
- Enhance;
- Modify; and
- Transform.

5.3.1.1 Do Nothing

The ‘Do Nothing’ alternative would retain Yonge Street in its present form, and as redevelopment occurs opportunities to improve the study area would be pursued as development applications are submitted to the City, consistent with the current design.

The existing inherent problems, which include inconsistent features such as sidewalks, pedestrian crossings and medians, lack of dedicated cycling facilities and concerns over traffic movement would persist. This alternative fails to create an attractive and consistent public realm that will serve people of all ages as they travel in and around the area for work, school and leisure, and does not address the state of good repair needed for Yonge Street in the near term. This alternative was not carried forward for comparison purposes.

5.3.1.2 Enhance

The ‘Enhance’ alternative provides opportunities to enhance Yonge Street in strategic locations to create a more attractive and multimodal street. The improvements along Yonge Street, such as wider pedestrian clearways would be minor improvements strategically added where space permits. There would be no relocation of the existing curbs.

This alternative does not address the projected multimodal transportation needs or City objectives. The minor improvements added do not represent a strategy for responding to changing transportation and activity patterns, and there are very limited opportunities to create a complete street. ‘Enhance’ does not support an attractive and consistent public realm, and does not support a vision for Yonge Street. This alternative was not carried forward.

5.3.1.3 Modify

The ‘Modify’ alternative requires a minor reconstruction to improve streetscape and pedestrian and cycling facilities along Yonge Street. The curb relocation would be minimal; this alternative would include bike facilities and wider pedestrian clearways where areas have not redeveloped. Six traffic lanes would be retained, together with the centre median.

This alternative focuses on redesigning Yonge Street to create an attractive street focused on enhanced pedestrian movement. It provides some opportunity to address existing pedestrian facilities and enhances the level of design through the corridor from its existing state. However, it does not provide the same opportunity to create a complete street or meet future multimodal needs. It should also be noted that the existing state of the sub-surface roadway indicates that the need for reconstruction is imminent. This alternative was not carried forward.

5.3.1.4 Transform

The ‘Transform’ alternative involves a major reconstruction to create a multimodal street and enhanced public realm. Yonge Street would be redesigned to create attractive public spaces and include bike facilities, reconstruction of wider pedestrian clearways throughout the corridor, and a total reconstruction of the curb.

This alternative provides the opportunities to create a complete street that serves multiple needs, while enhancing the attractiveness of Yonge Street. By transforming Yonge Street, there is the opportunity to create an identity and enhance public experience. This alternative was selected as the preliminary preferred alternative and carried forward for the development of the design alternatives.

Exhibit 5-4 summarizes the key components of the rationale for the evaluation, while **Exhibit 5-5** outlines the detailed assessment and conclusion for each planning alternative.

Exhibit 5-4: Summary of Evaluation of Stage 1 Planning Alternatives

Alternative	Carry Forward to Next Phase?	Key Components of the Rationale
1 – Do Nothing	No	• Does not resolve the identified problems and opportunities. • Does not promote balancing capacity for all modes of transportation. • Does not re-imagine Yonge Street to fulfil the City’s vision as a major promenade or enhance the existing streetscape. • Does not support Yonge Street’s role as a special public space. • Does not address the state of good repair needed for Yonge Street in the near term.
2 – Enhance	No	• Does not resolve the identified problems and opportunities. • Only permits new elements on existing sidewalks, offering little opportunity to enhance the entire corridor and balance capacity for all modes of transportation.
3 – Modify	No	• Supports cohesive vision for Yonge Street. • Provides the opportunity to add new elements, including different modes of transportation.

Alternative	Carry Forward to Next Phase?	Key Components of the Rationale
		• Potential for reconstruction is imminent based on existing roadway sub-surface. • Some opportunity for address existing pedestrian facilities but does not provide an opportunity to create a complete street - specifically no cycling facilities on Yonge Street, which does not align with the Cycling Network Plan and Policy direction.
4 – Transform	Yes	• Potential for reconstruction is imminent based on existing roadway sub-surface. • Supports cohesive vision for Yonge Street, including safety and complete streets. • Provides the opportunity to add new elements, including facilities for different modes of transportation. • Assesses the existing transportation network for both current and future needs. • Allows modifications that will re-imagine Yonge Street to fulfil the City's vision as a major promenade and enhance the existing streetscape.

Category	Alternative 1 Do Nothing	Alternative 2 Enhance	Alternative 3 Modify	Alternative 4 Transform	Summary
Long Term Resilience	 × Does not present a strategy for responding to changing transportation and activity patterns.	 × Does not present a strategy for responding to changing transportation and activity patterns.	 ✓ Provides some improvement over the do-nothing case in terms of meeting future needs	 ✓ Provides the greatest opportunity to create a street which serves multiple needs while enhancing the public experience and livability. ✓ Provides opportunities to integrate and enhance the attractiveness of public space.	Alternative 4 is preferred because it provides the greatest opportunity to create a street which has the flexibility and capacity to respond to evolving trends in transportation and the use of public space.
Accessibility, Mobility and Transportation Infrastructure	 × Does not address projected multimodal transportation needs or City objectives.	 × Does not address projected multimodal transportation needs or City objectives.	 ✓ Promotes the movement of people and goods to and within the study area. ✓ Provides opportunities to balance capacity for all modes. ✓ Addresses enhancing intersection operations.	 ✓ Promotes the movement of people and goods to and within the study area. ✓ Provides opportunities to balance capacity for all modes, maximizing support for transit in terms of pedestrian access. ✓ Addresses enhancing intersection operations.	Alternative 4 is preferred because it provides the greatest opportunity to enhance multimodal accessibility and mobility within the corridor.
Natural Environment	 ✓ No impact to terrestrial systems. ✓ No impact to SAR.	 ✓ Minimal impact to existing terrestrial features, including planted trees. ✓ Opportunity to enhance tree canopy. ✓ Provides less opportunity to integrate sustainability into the design. ✓ No impact to SAR.	 ✓ Minimal impact to existing terrestrial features, including planted trees. ✓ Opportunity to enhance tree canopy. ✓ Provides opportunity to integrate sustainability into the design. ✓ No impact to SAR.	 ✓ Minimal impact to existing terrestrial features, including planted trees. ✓ Opportunity to enhance tree canopy. ✓ Provides opportunity to integrate sustainability into the design. ✓ No impact to SAR.	Alternatives 3 and 4 are equally preferred for the following reasons: • Opportunity to enhance sustainability in the corridor (e.g. re-use of water). • Opportunity to enhance tree canopy.
Cycling and Walking	 × Does not address existing needs for pedestrians. × Uneven sidewalks are a problem for persons with disabilities and individuals using strollers. × No opportunity to add cycling facilities.	 × Does not address existing needs for pedestrians. × Uneven sidewalks are a problem for persons with disabilities and individuals using strollers. × No opportunity to add cycling facilities.	 ✓ Some opportunity to address existing needs for pedestrians. ✓ Opportunity to add cycling facilities.	 ✓ Greatest opportunity to address existing and future pedestrian needs, encouraging more walking. ✓ Opportunity to add cycling facilities.	Alternative 4 is preferred because it maximizes the potential for the corridor to address walking and cycling needs and opportunities.
Cultural Heritage and Built Heritage Resources	 ✓ No impacts to existing cultural heritage and built heritage resources.	 ✓ Potential to impact cultural heritage and built heritage resources is nominal, given all new elements would occur on City owned property.	 ✓ Minimal potential to impact cultural heritage and built heritage resources along and adjacent to Yonge Street given the various elements that would be modified. ✓ Provides opportunities to create connections to existing heritage resources along the corridor. ✓ Opportunities to increase signage about existing cultural resources along the corridor.	 × Greatest potential to impact cultural heritage and built heritage resources along and adjacent to Yonge Street given the number of new elements. ✓ Provides opportunities to create connections to existing heritage resources along the corridor. ✓ Opportunities to increase signage about existing cultural resources along the corridor.	Alternatives 3 and 4 are equally preferred for the following reasons: • Opportunities to enhance connections to public spaces and heritage resources.
Costs	 ✓ No upfront capital costs. ✓ No maintenance cost implications.	 ✓ Low capital costs. ✓ No maintenance cost implications.	 × Moderate capital costs. ✓ Low maintenance cost increase.	 × Highest capital costs. ✓ Low maintenance cost increase.	Alternative 1 is preferred as it has the lowest capital cost. Alternative 4 has the highest cost.
Constructability and Utilities	 ✓ Small amount of construction poses no issues. ✓ No issues with utilities.	 ✓ Small amount of construction poses no issues. ✓ No issues with utilities.	 ✓ No constructability issues – construction is modest in scale. × Minimal impact on utilities.	 ✓ No issues with constructability (typical road reconstruction effort). × Small impact on utilities re: connections.	Alternatives 1 and 2 are preferred as they have the least impact on utilities, and pose no issues with respect to ease of construction, due to the minimal amount of work involved.
Planning: Vision and Identity	 × Does not support cohesive vision for Yonge Street. × Does not encourage vibrant, mixed use development.	 × Does not support cohesive vision for Yonge Street. × Does not encourage vibrant, mixed use development.	 ✓ Supports cohesive vision for Yonge Street.	 ✓ Strongly supports cohesive vision for Yonge Street.	Alternative 4 is preferred as it provides by far the greatest opportunity for creation of a streetscape with a unique identity in keeping with the City's objectives for Yonge Street and North York Centre, which enhances pedestrian comfort in the corridor.
Opportunities for Streetscape Design Excellence	 × Does not provide opportunities for consistent level of design excellence for Yonge Street.	 × Very limited opportunities for introducing design excellence, as part of site-specific interventions.	 ✓ Some opportunities for enhancing level of design excellence throughout the corridor.	 ✓ Provides the greatest opportunity for introducing consistently high urban design excellence throughout the study focus area.	Alternative 4 is preferred as it provides the greatest opportunity for introducing a regime of design excellence throughout the corridor.
Overall					

LEGEND:

5.3.2 Transportation Assessment

Streets are a critical part of a city's public open space as they often reflect neighbourhood characteristics and impact the public realm. The City of Toronto's Official Plan and published guidelines have directed approaching the design of public spaces and streets through a 'Complete Streets' lens, and the Official Plan emphasizes the importance of balancing the various users and uses of the right-of-way. This approach has been adopted as an integral component in this EA study. Complete Streets are designed to consider the needs of all users, such as people who walk, cycle, take public transit or drive, and people of varying ages and levels of mobility. They also take into consideration the public realm and provision for activity, such as pedestrian clearway cafés and street furniture, and green elements such as street trees and stormwater management.

5.3.2.1 Pedestrian Movement

Pedestrian movement has been considered in terms of four factors:

- Pedestrian clearway width;
- Crossing opportunities;
- Crossing distances; and
- Public realm improvements.

The 'Do Nothing' alternative does not represent an improvement in any of the four factors noted above. The 'Enhance' alternative provides minimal improvement in crossing distance at a small number of locations but little or no improvement in the other factors because no relocation of the curbs is included. The 'Modify' alternative offers a slight improvement with respect to the four factors, but does not create a consistently enhanced space for pedestrian movement along Yonge Street or for crossings of the street. The 'Transform' alternative offers by far the greatest improvement in pedestrian space along the street through the creation of a pedestrian clearway expected to be in accordance with City standards, in shortened crossing distances through the reduction of traffic lanes from six to four, and improvements to the public realm through the enhanced landscape. This alternative is the only one to permit consistent expansion of public realm opportunities through the study corridor, as well as a comprehensively expanded pedestrian network.

5.3.2.2 Cycling

Only the 'Transform' alternative provides a safe, secure and continuous cycling facility through the Focus Study Area. The other alternatives provide little or no separation for cyclists using Yonge Street. Cyclists will continue to face an unsafe situation, either mixing with traffic or conflicting with pedestrians on the sidewalks.

5.3.2.3 Transit

The ‘Do Nothing’ and ‘Enhance’ alternatives will have no effect on bus operations reliability or speed on Yonge Street; however, they will also not promote a transit orientation in trip-making in relation to use of the TTC subway lines, GO Transit or TTC bus services, because there would be little or no enhancement of the pedestrian environment.

The ‘Modify’ alternative, depending on the specific design initiatives, may or may not have an effect on the reliability and/or speed of bus operations on Yonge Street. This alternative is also expected to have a minimal impact in promoting greater transit use, because any improvements in the pedestrian space are projected to be inconsistent along the corridor.

The ‘Transform’ alternative, by removing one lane of traffic capacity per direction, has the highest likelihood of a negative impact on bus speed and reliability. However, by improving the public realm through the creation of a more consistent pedestrian space with greater widths and shorter crossing distances at intersections, ‘Transform’ can lead to increases in transit use by supporting an overall multi-modal environment. This is a trade-off which aligns with the study goals of a more balanced allocation of the road right-of-way to achieve greater sustainability in trip-making and improved livability and activity levels along the Yonge Street corridor.

It should be noted that during Stage 1, meetings were conducted with TTC and GO Transit bus operations staff. To assist in facilitating effective surface transit operations on Yonge Street, it was agreed that 5 of the 9 GO Transit bus stops would be removed as part of the ‘Transform’ design: Elmhurst-Greenfield; Elmwood – North York Blvd; Norton-Ellerslie; Kempford, and Finch northbound and southbound. This was reflected in the ‘Transform’ design and aspects which remain to be finalize through detailed design – specifically relating to design of the cycle tracks at bus stops.

5.3.2.4 Road Network

The ‘Do Nothing’ and ‘Enhance’ alternatives represent minimal if any change to the Yonge Street road design or operation for private and commercial vehicles. The ‘Modify’ alternative represents a minor change, which is expected to have a slight negative impact on traffic operations; the parallel service roads, Beecroft Road and Doris Avenue, have been designed to accommodate through traffic around North York Centre, and could easily accommodate any minor diversion of traffic resulting from the Modify alternative.

A similar conclusion is reached with respect to the ‘Transform’ alternative. Traffic diverted as a result of the removal of one lane per direction along Yonge Street is expected to distribute across multiple alternative routes. Modest traffic volume

increases can be expected on the service roads (Beecroft Road and Doris Avenue), mid-block minor arterial roads (Willowdale Avenue and Senlac Road) and the 'next adjacent' arterial roads (Bayview Avenue and Bathurst Street). The 'Transform' alternative is the only one which meets the goals of the Problem and Opportunity Statement, in terms of balancing the allocation of the Yonge Street right-of-way among modes.

5.3.3 Preferred Stage 1 Planning Alternative

After receiving comments from the public and assessing the alternative solutions using the evaluation criteria, the preliminary preferred Stage 1 alternative selected is **Transform** (Alternative 4). The 'Transform' alternative includes a full reconstruction of Yonge Street within the City's existing right-of-way to include wider sidewalks, enhanced pedestrian crossings, street trees, enhancements and extensions of the median, one-way cycle tracks on each side, options for parking as well as planters, public art and street furniture throughout. From Sheppard Avenue to Finch Avenue, traffic lanes on Yonge Street will be reduced from 6 to 4 lanes. South of Sheppard Avenue to Avondale Avenue, the number of lanes is proposed to remain at 6, but minor improvements are proposed to improve access management, primarily via extension of the centre median.

5.3.4 Alternative Design Concepts

Given that the available right-of-way width varies along the Yonge Street corridor, various design options for the 'Transform' alternative were developed. These design options were presented for feedback at Public Drop-In Event #1, the design charrettes, and Public Drop-In Event #2. **Exhibit 5-6** explains each of the options, and whether these were carried forward for further evaluation.

Building on the evaluation criteria used to assess the planning alternatives, the design alternatives criteria shown in **Exhibit 5-7** were presented at Public Drop-In Event #2 for feedback. These criteria were used for the evaluation of the design options.

This set of criteria is a simplified version of the planning alternatives criteria; all criteria that would not differ for the various design options were removed.

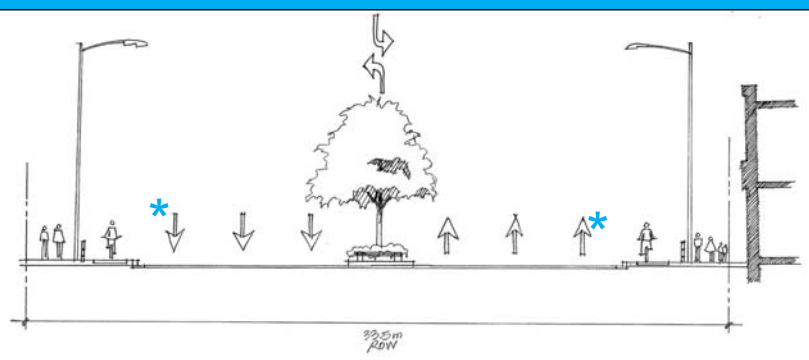
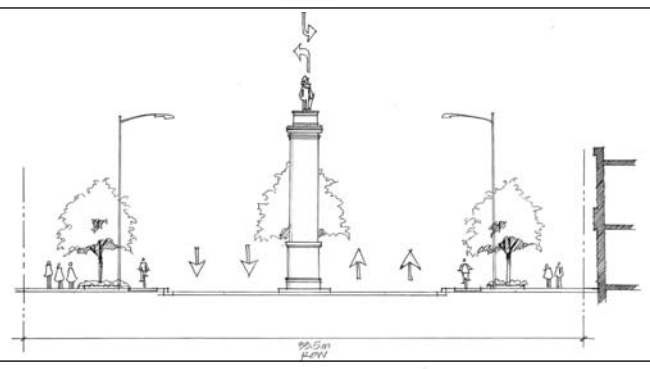
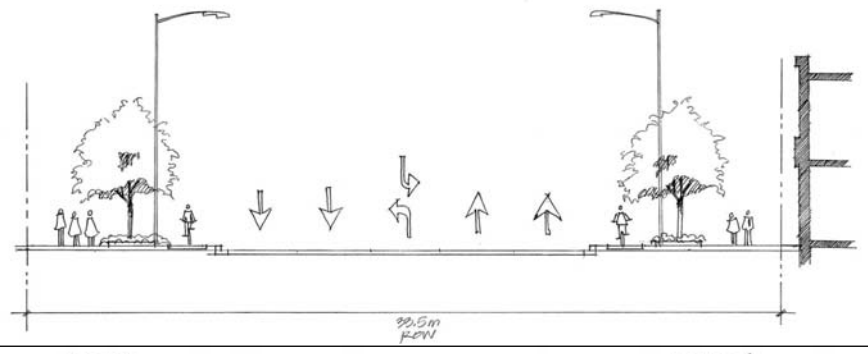
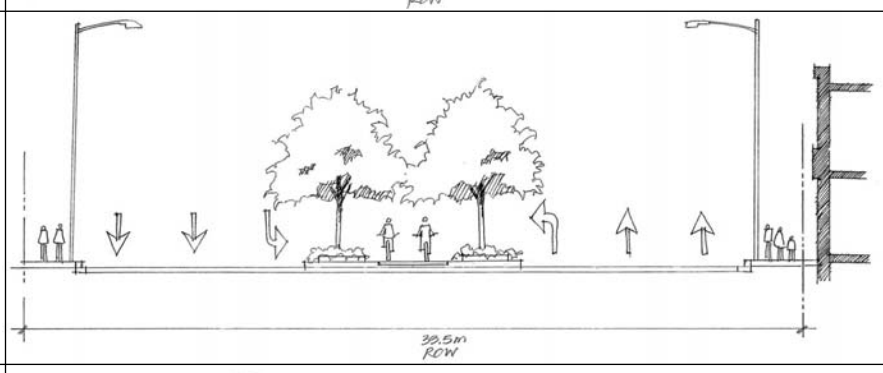
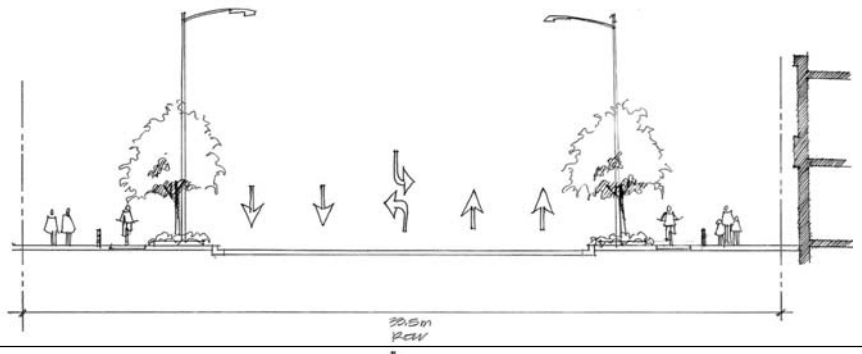
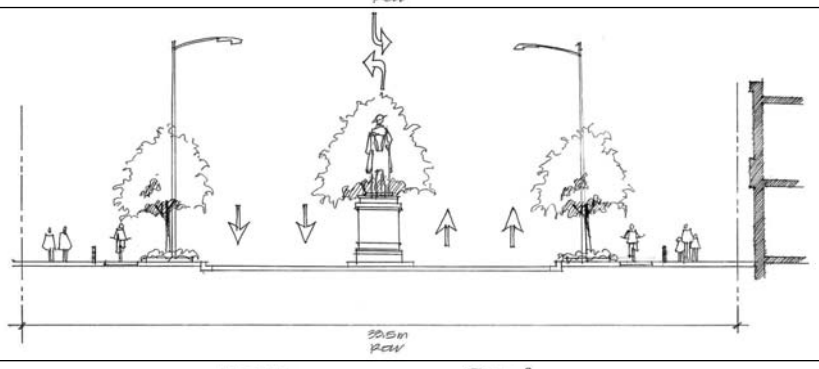
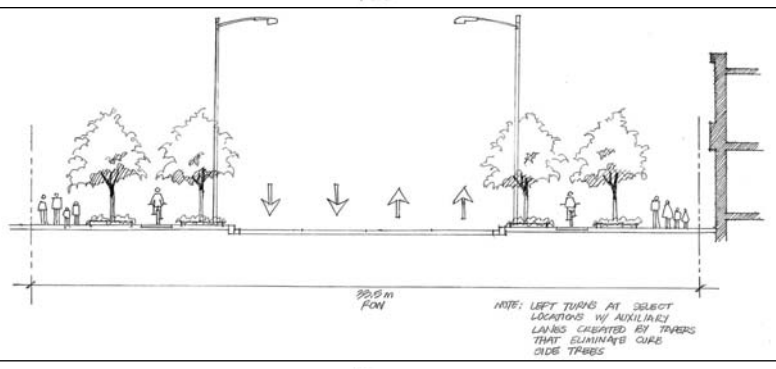
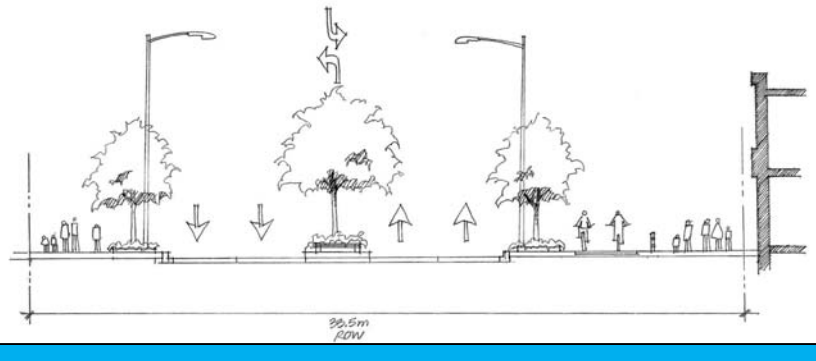
Transform Design Option	Cross Section	Carry Forward to Next Phase?	Key Components of the Rationale
4A		YES	Maintains the current vehicle capacity and space for emergency vehicles, and adds cycle tracks. This option does not permit wider sidewalks, or additional plantings. May be applicable in high traffic segments along Yonge Street.
4B		YES	Provides wider widewalks and cycle tracks, and reduces traffic lanes. There is a good potential for enhancing the streetscape by maintaining the median as an urban design feature and the cycle track provides flexible space for emergency vehicles.
4C		NO	Provides for wider sidewalks and cycle tracks, and reduces traffic lanes. However, the two-way centre left-turn lane does not enhance pedestrian or vehicle safety, and detracts from the urban design character.
4D		NO	The cycle tracks in the median create complications for cyclists and drivers at the intersections. Wider median limits opportunity for wider sidewalks and enhanced urban design adjacent to the street.
4E		NO	Provides for wider sidewalks and cycle tracks, and reduces traffic lanes. However, the two-way centre left-turn lane does not enhance pedestrian or vehicle safety, and detracts from the urban design character.
4F		YES	Provides cycle tracks, wider sidewalks and wider planting zone, and retains the median for pedestrian refuge. The cycle tracks are separated from vehicle traffic and there are opportunities for full-time parking bays.
4G		YES	Provides cycle tracks, wider sidewalks and wider planting zone, allowing for a double row of trees. This section may be applicable along Yonge Street with a wider right-of-way.
4H		NO	The two-way cycle track on one side of Yonge Street creates access issues for cyclists, and potential conflicts with pedestrians. Unbalanced cross-section does not create equal opportunities for urban design enhancement.

Exhibit 5-7: Evaluation Criteria for the 'Transform' Design Options

Category	Criteria
Accessibility, Mobility and Transportation Infrastructure	Promotes effective movement of people and goods
	Transportation network capacity
	Parking capacity
	Intersection operations and transportation efficiency
	Safety for all users
	Effect on emergency services
	Adherence to City design standards and guidelines for transportation facilities
	Accessibility (compliance with the City's Accessibility Standards and guidelines, and Provincial guidelines)
Cycling and Walking	Ability to introduce new cycling facilities
	Ability to improve pedestrian facilities
Natural Environment	Maximizes opportunity for street tree planting in optimized urban condition that provides for the long-term health of the trees
	Sustainability (e.g. reuse of stormwater)
	Climate change
Cultural Heritage and Built Heritage Resources	Impacts on built heritage resources
	Impacts on cultural heritage landscapes
Costs	Construction costs
	Maintenance / operational costs for enhanced streetscape and canopy
	Life cycle costs
	Maintenance / operational costs for winter maintenance
Constructability and Utilities	Transit, pedestrian, road and bike mobility through the study area and the duration of disruption for each mode
	Number of construction stages and duration
	Number and scale of existing utilities affected
	Potential utility conflicts
	Effects on business during construction

Category	Criteria
Planning: Vision and Identity	Supports Yonge Street's role as a special public space
	Encourages vibrant, mixed-use development
	Effects on business (e.g. retail)
	Impacts to private property
Opportunities for Design Excellence	Percentage of right-of-way dedicated to public realm uses such as pedestrian facilities, public art, and street furniture
	Supports design excellence of infrastructure and streetscape
	Enhances the attractiveness of urban environment and creates place-making opportunities
	Supports integration with public spaces
	Wind / pedestrian comfort / microclimate

5.3.5 Evaluation of the Transform Design Options

Using the evaluation criteria, the four design options that were carried forward were evaluated. The detailed evaluation matrix is shown in **Exhibits 5-8a** and **5-8b**.

A key determinant of which option should be applied in each segment of the street was the needs of vehicles (i.e. private vehicles [cars and trucks] and buses). While recognizing the study goal of creating a more balanced transportation system in the Focus Study Area, there are certain needs which require more than a four-lane cross-section.

South of Sheppard Avenue, traffic volumes are higher due to the presence of the Highway 401 and Yonge Street interchange. There are several closely spaced intersections where left and right turns to and from Yonge Street are permitted. Extensive weaving occurs northbound, as first the drivers from the eastbound highway off-ramp merge with Yonge Street traffic, then drivers from the westbound off-ramp merge immediately after this point. Drivers from both ramps attempt to move quickly into the left turn lanes, and some northbound drivers on Yonge Street move to the right in order to turn eastbound. During peak periods, this leads to congestion. This situation indicates that removal of a through lane would lead to very poor traffic operations in this segment. Provision of additional control over mid-block turning movements would be beneficial in terms of promoting smoother traffic flow, and thus a southerly extension of the median has been considered.

Category / Criteria	Option 4A	Option 4B	Option 4F (parking bays)	Option 4G	Summary
					
Accessibility, Mobility and Transportation Infrastructure • Promotes effective movement of people and goods • Transportation network capacity • Parking capacity • Intersection operations and Transportation efficiency • Safety for users • Effect on emergency services • Adherence to City design standards and guidelines for transportation facilities • Accessibility (Compliance with City's Accessibility Standards and provincial guidelines)	• Off-peak on-street parking is maintained. • Number of vehicle lanes is maintained which has the potential for more vehicle conflicts. • Longer crossing distances for pedestrians and the need to increase signal timing at intersections. • The design meets the minimum required for pedestrian clearway. • GO Transit vehicles can be accommodated, while maintaining two lanes of vehicular traffic.	• No on-street parking is provided. • Reduced crossing distances for pedestrians. • The design exceeds the minimum required for pedestrian clearway. • Accommodating GO Transit vehicles creates less effective movement for vehicles and buses. • Some impact on emergency service vehicles during peak periods.	• Limited number of on-street parking is provided (approx. 10% of the existing supply). • Reduced crossing distances for pedestrians. • The design exceeds the minimum required for pedestrian clearway. • Accommodating GO Transit vehicles creates less effective movement for vehicular and buses. • Some impact on emergency service vehicles during peak periods.	• Reduced crossing distances for pedestrians. • The intersection operations are affected by the limited left-turn lanes. • The design exceeds the minimum required for pedestrian clearway. • No median allows for greatest ease of movement for emergency service vehicles. • No median increases the crossing complexity for pedestrians. • Accommodating GO Transit buses creates less effective movement for vehicles along a 4-lane cross section.	Design Options 4B and 4F are equally preferred for the following reasons: • Promotes effective movement of people by reducing crossing distances for pedestrians. • The design exceeds the City's minimum required for pedestrian clearway. • Mobility for all users and modes of transportation is integrated into Design Options 4B and 4F. • The transportation network capacity and modal shift that results from reducing the vehicle lanes to four lanes on Yonge Street can be accommodated on the service roads. • Emergency service vehicle impacts can be mitigated by use of the service roads and providing breaks in the median. • The road safety audit indicates the benefits of the median for pedestrians and motorists (i.e., eliminates head-on collisions, provides pedestrian refuge, reduces complexity of pedestrian crossings, etc.).
Planning: Vision and Identity • Supports Yonge Street's role as a special public space • Encourages vibrant, mixed-use development • Effects on business (e.g., retail)	• Provides new sidewalk and cycle facility. • Reduced sidewalk width. • Reduced number of street trees and planters. • Maintaining status quo of 6-lanes reduces vibrancy and opportunities for retail zone, patios, street furniture, etc.	• Wider sidewalk area can generate pedestrian activity and interest in businesses. • Opportunity for street trees in the landscaped median (4B and 4F) and along Yonge Street. • Cycle traffic can have a positive impact on businesses. • Parking reduction may have a negative impact on businesses. • Opportunity to enhance the identity of the corridor for a retail zone, patios, street furniture, etc.			Design Options 4B, 4F and 4G are equally preferred for the following reasons: • Wider sidewalk area and more pedestrian activity, which in turn can generate more interest in businesses. • Opportunities to create an identity for Yonge Street. • Potential to integrate retail / businesses' plans for patios into the design to create vibrancy.
Opportunities for Design Excellence • Percentage of the right-of-way dedicated to public realm uses such as pedestrian facilities, public art, and street furniture • Supports design excellence of infrastructure and streetscape. Enhances the attractiveness of urban environment and creates place-making opportunities • Supports integration with public spaces • Wind / Pedestrian comfort / Microclimate	• Limited opportunities for design excellence given the minimum pedestrian clearway, street furniture and amenities. • Lack of street trees. • On-street parking can affect views / sightlines for pedestrians. • Potential for the median but has limited value to pedestrians and cyclists. • Minimal opportunities to enhance streetscape design.	• A wider sidewalk offers opportunities for design excellence, accessibility, street furniture and amenities. • Historic value of the median can be retained and expanded. • Street trees enhance the attractiveness of the design and provide shade for pedestrian comfort. • Offers opportunities to integrate public spaces. • The 4-lane cross section, street trees and median break up the scale of the street. • Opportunities to enhance streetscape design through paving, lighting, and hardscape.	• A wider sidewalk offers opportunities for design excellence, accessibility, street furniture and amenities. • Historic value of the median can be retained and expanded. • On-street parking bays reduces the areas that can be dedicated for pedestrian clearway and street trees. • Street trees enhance the attractiveness of the design and provide shade for pedestrian comfort. • The 4-lane cross section, street trees and median break up the scale of the street. • Opportunities to enhance streetscape design through paving, lighting, and hardscape.	• A wider sidewalk offers opportunities for design excellence, accessibility, street furniture and amenities. • Historic value of the median is lost, as the median is removed. • Street trees enhance the attractiveness of the design and provide shade for pedestrian comfort. • Eliminating the median affects the scale of the street. • Opportunities to enhance streetscape design through paving, lighting, and hardscape.	Design Option 4B is preferred for the following reasons: • Opportunity to expand the median and retain its historic value along Yonge Street. • Street trees enhance the attractiveness of the design and provide shade for pedestrian comfort. • Street trees and the median break up the scale of the street, enhancing the user experience. • Lack of on-street parking provides clear sightlines for all users. • Design Options 4B, 4F and 4G have the best opportunities to integrate public spaces through shared streetscape design.
Cycling and Walking • Ability to introduce new cycling facilities • Ability to improve pedestrian facilities • Ability to provide for secure separated cycling lanes / cycle track, and bike parking	• Pedestrian clearway is limited in size given the large portion of the ROW dedicated to travel lanes. • Incorporates elevated cycling facilities along Yonge Street. • Constrained ROW affects design of the cycle track and eliminates separation of pedestrians. • Limited separation (buffer) for pedestrians and cyclists. • Least friendly for pedestrians and cyclists (source: road side safety audit).	• Generous pedestrian clearway of 4.05 m enhances safety and accessibility for children and seniors. • Incorporates elevated cycling facilities along Yonge Street. • Separated cycle track and buffer offers the best level of service for pedestrians and cyclists.	• Provides for a pedestrian clearway of 3.45 m which enhances safety and accessibility for children and seniors. • Incorporates cycling facilities along Yonge Street, separated from traffic. • Cycle track location has the potential for pedestrian and cyclist conflicts.	• Approximately 3 m dedicated for the pedestrian clearway which enhances safety and accessibility for children and seniors. • Incorporates cycling facilities along Yonge Street, separated from traffic. • No median increases the risk for pedestrians completing mid-block crossings (i.e., need to cross 4-lanes).	Design Option 4B is preferred for the following reasons: • All Design Options encourage and support active living which contributes to public health. • The wider pedestrian clearway enhances safety and accessibility for all users, including children and seniors. • Separated cycle track and buffer provides the best level of service for pedestrians and cyclists.

The preliminary preferred alternative is Design Option 4B north of Sheppard Avenue and Design Option 4A south of Sheppard Avenue, reflecting the constraints and conditions in the corridor.

Legend

Greater Impact / Least Benefits → Less Impact / Most Benefits

Footnote: The minimum pedestrian clearway refers to the minimums provided by City of Toronto's Pedestrian Projects Unit.

Category / Criteria	Option 4A	Option 4B	Option 4F (parking bays)	Option 4G	Summary
					
Constructability and Utilities • Transit, pedestrian, road, and bike mobility through the study and duration of disruption for each mode • Number of construction stages and duration • Number and scale of existing utilities affected • Potential utility conflicts • Effects on business during construction • Impacts to Private Property	• Impacts of subway infrastructure for footings and utility are under investigation for all Design Options. • Age of utilities along Yonge Street may create constructability implications. • All Design Options have the same potential to impact utilities based on the major reconstruction required. • It is anticipated that construction staging, including the duration of construction and number of stages will be the same for all Design Options. • The potential effects on businesses during construction are anticipated to be the same for all the Design Options. • For all Design Options, there is no physical impact to private property.				All Design Options are equally preferred for the following reasons: • All Design Options have the same potential to impact utilities and the construction duration / staging is anticipated to be the same for all Design Options.
Natural Environment • Maximizes opportunity for street tree planting in optimized urban condition that provides for the long term health of the trees • Sustainability (example: reuse of stormwater) • Climate Change	• Extra vehicle lane limits opportunities for street trees. • Reduced street trees limits opportunities for evapotranspiration. • Reduced street trees contribute to heat island effect.	• Opportunities for street tree planting along the pedestrian clearway and in the landscaped median. • Street trees support potential for evapotranspiration.	• Opportunities for street tree planting along the pedestrian clearway and in the landscaped median. • Street trees support potential for evapotranspiration.	• Where the ROW is wide, 4G provides the opportunity for a double row of street trees. • Street trees support potential for evapotranspiration.	Design Option 4G is preferred for the following reasons: • Maximizes opportunities for street trees, as an additional row of street trees can be provided where the right-of-way is wide. • Infiltration techniques are limited for all Design Options by the subway infrastructure under Yonge Street.
Cultural Heritage and Built Heritage Resources • Impacts on built heritage resources • Impacts on cultural heritage landscapes	• Impacts to cultural heritage and built heritage resources are not anticipated given the work will be confined to the existing ROW. • Opportunity to integrate cultural facilities and landmarks into the roadway design is limited based on the 6-lane cross section.	• Impacts to cultural heritage and built heritage resources are not anticipated given the work will be confined to the existing ROW. The potential impact to cultural heritage and built heritage resources is equal for Design Options 4B, 4F, and 4G. • Opportunity to integrate cultural facilities and landmarks into the roadway design and highlight cultural heritage locations.			Design Options 4B, 4F and 4G are equally preferred for the following reasons: • All Design Options have the same opportunities to integrate cultural facilities and landmarks into the roadway design. • Potential impacts are not anticipated for any of the Design Options.
Costs • Capital and Construction costs	• High construction costs.	• High construction costs.	• Anticipated highest construction costs.	• Anticipated highest construction costs. • No median to construct.	Design Options 4A and 4B are equally preferred for the following reasons: • Capital and Construction Costs are less than 4F and 4G.
Costs • Life cycle costs • Maintenance/operational costs for: - Roadway - Enhanced streetscape and canopy trees - Winter maintenance	• Greater roadway results in more operational and maintenance costs for salting and plowing. • Fewer street trees and sidewalk planters' to maintain. • Median maintenance is required.	• Less roadway to build and maintain results in less operational and maintenance costs. • More street trees and sidewalk planters' results in higher maintenance costs. • Median maintenance is required.	• Less roadway to build and maintain results in less operational and maintenance costs. • More street trees and sidewalk planters' results in higher maintenance costs. • Median maintenance is required. • Need to maintain and plow the parking bays in the winter.	• Less roadway to build and maintain results in less operational and maintenance costs. • More street trees and sidewalk planters' results in higher maintenance costs. • No median to maintain.	Design Option 4B is preferred for the following reasons: • Cost to maintain the roadway is anticipated to be the same, except for 4F, which is anticipated to be more costly for winter maintenance. • Maintenance costs for the street trees and median is anticipated to be the same for Design Options 4B and 4F. Option 4G has the highest maintenance cost. • Maintenance of the median is anticipated to be the same for Design Options 4A, 4B and 4F.
OVERALL	The 6-lane cross section in Design Option 4A limits opportunities to create a vision for Yonge Street; integrate public spaces; provides minimum pedestrian clearway; negatively affects design of the cycle track, and lacks street trees.	Design Option 4B provides opportunities to enhance the streetscape, dedicate a greater percentage of the road to all modes of transportation, offers opportunities to integrate public spaces and create an identity for Yonge Street and removes all parking on Yonge Street.	Design Option 4F provides opportunities to enhance the streetscape, dedicate a greater percentage of the road to all modes of transportation and provides limited on-street parking. The on-street parking reduces the amount of potential space for pedestrians and street trees.	Design Option 4G provides opportunities to enhance the streetscape, provides two-rows of street trees, however, the median and its historic value is lost, and this increases the complexity of pedestrian mid-block crossings.	**Design Option 4B** is preliminary preferred for the following reasons: • Provides the greatest opportunity for design excellence. • Creates a distinct and attractive identity for Yonge Street, addressing the City's vision for North York Centre. • Maximizes pedestrian space and increases crossings, which creates vibrancy, encourages an active lifestyle, and enhances safety. • Maintains acceptable intersection operations. • Some increase in vehicular traffic would be accommodated on the service roads (Doris Avenue and Beecroft Road).

The preliminary preferred alternative is Design Option 4B north of Sheppard Avenue and Design Option 4A south of Sheppard Avenue, reflecting the constraints and conditions in the corridor.

Legend

Greater Impact / Least Benefits → Less Impact / Most Benefits

Footnote: The minimum pedestrian clearway refers to the minimums provided by City of Toronto's Pedestrian Projects Unit.

North of Finch Avenue, TTC buses must exit from the Finch Bus Terminal (located east of Yonge Street) via a right turn onto Yonge Street northbound from the mid-block driveway, into a dedicated bus lane. The geometrics of the exit require the curb lane to be maintained. Southbound, traffic demands for left and right turns indicate that Finch Avenue is the logical transition point from three to two lanes southbound.

5.3.6 Selection of the Stage 1 Preferred Design Option

Following the evaluation of the 'Transform' design options and comments from the public at Public Drop-In Event #2, the preliminary preferred design options selected are **4A** (between Sheppard Avenue and Florence Avenue/Avondale Avenue) and **4B** (Sheppard Avenue to Finch Avenue). Both design options are summarized below and shown in **Exhibits 5-9** and **5-10**, respectively. Combined, this preferred alternative is referred to as **Transform Yonge.**

Based on traffic requirements related to demands to and from Highway 401, it was determined that the recommended Design Option for Yonge Street between Sheppard Avenue and Florence Avenue/Avondale Avenue is 4A. This design option includes:

- A six-lane cross section with the travel lanes measuring 3.2 metres and curb lanes measuring 3.3 metres (note that the lane widths should be confirmed during detail design);
- A 4.5 metre median that accommodates a 3.0 metres left-turn lane where identified or 3.5 metre raised planters where left-turn lanes are not identified;
- A unidirectional 1.5 metre raised cycle track located immediately behind the curb on either side of Yonge Street and accompanying 0.7 metre buffer from automobile vehicle lanes and 0.8 metre buffer from pedestrian clearway; and
- A 2.55 metre pedestrian clearway on either side of Yonge Street.

To accommodate wider pedestrian clearways in Design Option 4A, it is possible to eliminate the 0.7 metre buffer between automobile vehicle lanes and the unidirectional cycle track in order to achieve 3.25 metres of pedestrian clearway in certain constrained locations.

Design Option 4B will be implemented from Sheppard Avenue to Finch Avenue. It includes:

- A total of four travel lanes measuring at least 3.2 metres, with slightly wider curb lanes (measuring 3.3 metres) to accommodate buses and trucks (note that the lane widths should be confirmed during detail design);
- A 4.5 metre tree-lined median. At intersections this would reduce to 1.5 metres (to accommodate traffic signal poles only) and a 3.0 metre left-turn lane;

- A unidirectional raised cycle track (as described in **Section 7.1.2**) on each side of the street;
- A tree and furnishing zone, typically 2.0 metres wide depending on site constraints; and,
- A typical pedestrian clearway (the unobstructed width available to pedestrians) of 3.3 metres within the property line. Newer developments incorporate additional setbacks from the property line to the building face, much of which would appear to the user to be a continuation of the sidewalk.

At locations where the TTC bus stops and/or GO Transit bus stops are proposed, bus shelters and passenger queuing areas will be provided; these have been planned to function in coordination with the cycle tracks.

There are points along the corridor where the pedestrian clearway is reduced due to existing buildings. However, at all locations the corridor will be designed to meet or exceed minimum accessibility requirements. As older properties are redeveloped, the City will continue to require increased setbacks to the face of the proposed building.

The available right-of-way width (between properties on opposite sides of the street) varies along Yonge Street, as do traffic conditions. As described in **Section 5.3**, several design options were identified to be carried forward, including Design Option 4A.

South of Sheppard Avenue, the existing six lanes will be retained. This will facilitate travel to and from Highway 401. The northbound curb lane on Yonge Street at Sheppard Avenue is primarily used by right-turning traffic, hence from an operational perspective this is a logical point at which to transition from three to two lanes.

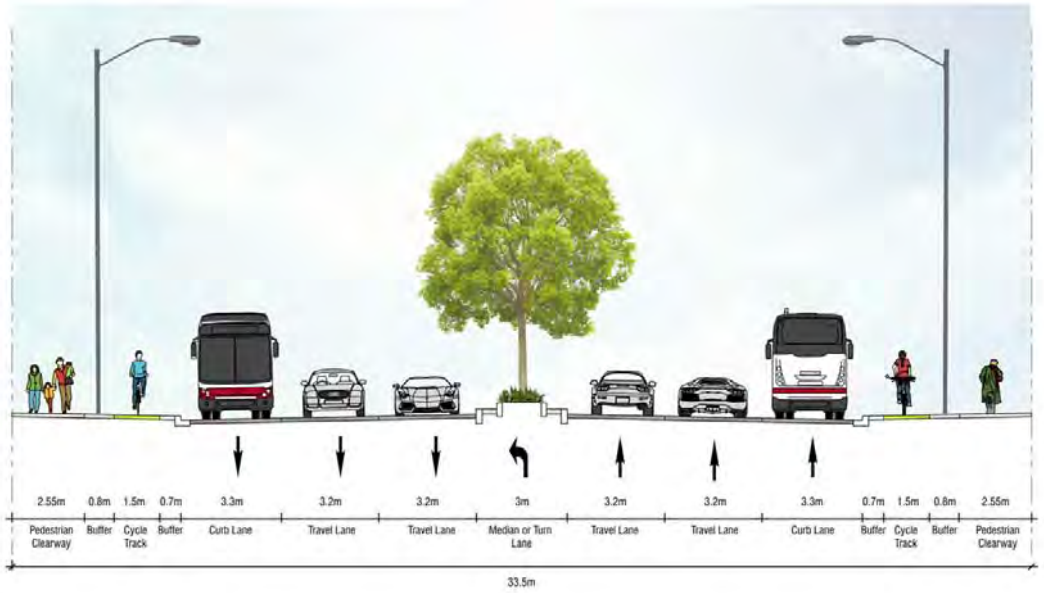
Although a continuous cycling facility will be maintained along the corridor, there may be locations south of Sheppard Avenue where, due to site constraints and low pedestrian volumes, this may be shared with the pedestrian space (although separated from motor vehicular traffic) in the form of a multi-use trail. The need and justification for this will be reviewed further at the Detail Design stage.

Design Option 4G features additional trees and plantings but removes the landscaped median. The need to maintain exclusive left turn lanes at intersections would result in an unattractive streetscape, with only very short sections including the double row of trees. The pavement width would be continually widening and narrowing between intersections. This would not result in an attractive streetscape or the consistent pedestrian promenade envisioned. This option is not recommended for implementation within the available right-of-way, because of these negative attributes. However, there is the potential for locations resembling Design Option 4G to be implemented where the additional trees and planters can be introduced outside of the right-of-way, within the property line.

Design Option 4F was similar to Design Option 4B, except that the cycle track would be positioned between the pedestrian clearway and the tree planting zone. Given the high pedestrian volumes along many parts of the corridor north of Sheppard Avenue, it was considered preferable to have the trees separating the cyclists from the pedestrians. The opportunity for on-street parking bays offered by Design Option 4F was determined not to be required for the reasons outlined in **Section 7.1.4**. This could be revisited during detail design.

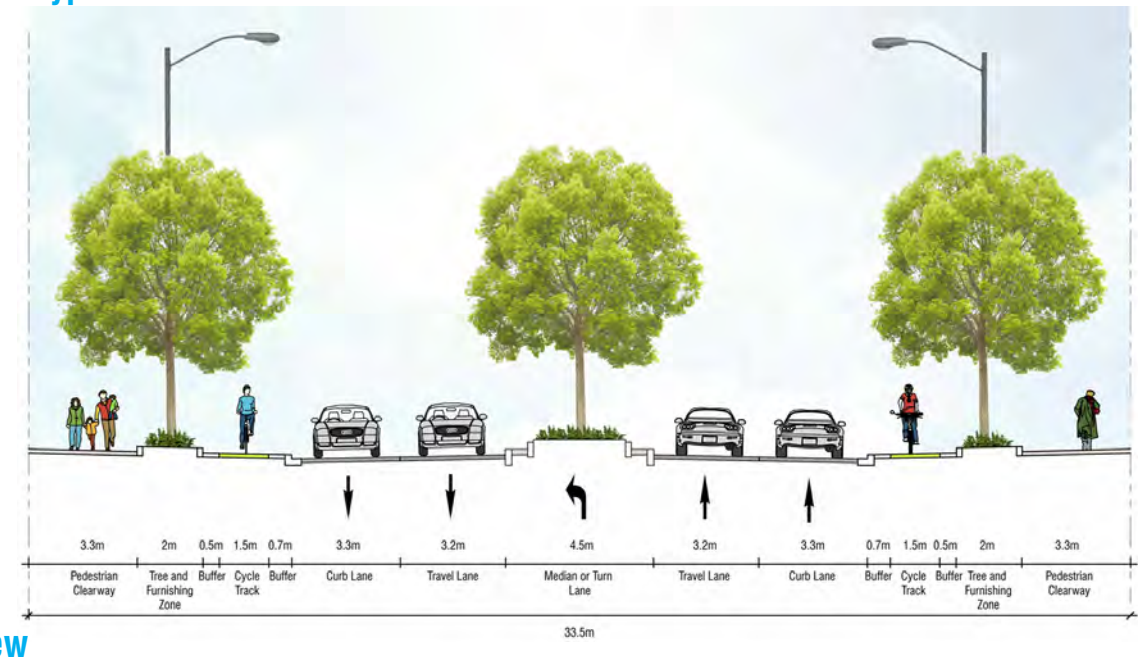
Exhibit 5-11 summarizes the evaluation of the 'Transform' Design Option alternatives.

Typical Cross Section



Typical Section - Plan View

Typical Cross Section



Typical Section - Plan View

Exhibit 5-11: Summary of Evaluation of 'Transform' Design Options for Yonge Street

Alternative	Carry Forward to Next Phase?	Key Components of the Rationale
Design Option 4A	Yes	• Maintains the current vehicle capacity and space for emergency vehicles • Adds cycle tracks • Applicable for high traffic segment between Sheppard Avenue and Florence Avenue/Avondale Avenue along Yonge Street • Curb lanes can serve as parking lanes outside of peak traffic hours
Design Option 4B	Yes	• Provides wider pedestrian clearways and cycle tracks resulting from the reduction in traffic lanes from 6 to 4 lanes • Good potential to enhance the streetscape by maintaining the median as an urban design feature • The cycle tracks can provide flexible space for emergency vehicles
Design Option 4F	No	• Given the high pedestrian volumes along many parts of the corridor north of Sheppard Avenue, it was considered preferable to have the trees separating the cyclists from the pedestrians. • The opportunity for on-street parking bays offered was determined not to be required
Design Option 4G	No	• Removes the landscaped median. • The need to maintain exclusive left turn lanes at intersections would result in an unattractive streetscape, with only very short sections including the double row of trees. • The pavement width would be continually widening and narrowing between intersections. This would not result in an attractive streetscape or the consistent pedestrian promenade envisioned.

Benefits

The benefits of **Transform Yonge** are expected to include:

- Enhanced safety and comfort for pedestrians and cyclists, due to the dedicated cycling facilities and improved pedestrian infrastructure. The pedestrian infrastructure includes wider sidewalks, shorter north/south and east/west crossings, and two additional signalized crossings (detailed in **Section 5.5.1.2**);
- Healthy living, as more people are encouraged to cycle and walk;
- Increased support for use of transit, as pedestrian and cyclist access to transit is increased;
- Improved sustainability and air quality as the result of enhanced plantings and reduced reliance on automobiles, for the benefit of pedestrians, cyclists, residents and patio-goers;
- Through updated design of sewers and the expanded planting areas, greater sustainability in terms of water retention;
- Improved microclimate, reducing heat and wind impacts;
- Integration of major public spaces adjacent to the street, providing more space for festivals and community events, which is expected to increase the economic benefits to local businesses; and,
- Economic prosperity and vitality, with improved cycling and pedestrian access to businesses on Yonge Street, and an enhanced identity for Yonge Street as a destination, not merely as a thoroughfare. Studies of other streets in Toronto have shown increased economic activity along streets with enhanced pedestrian and cycling infrastructure.

5.4 Stage 2 Evaluation

The study has been conducted in two stages. Stage 1 encompassed the original study, which only involved examination of alternatives for Yonge Street. As a result of direction from City Council, a Stage 2 study was later added which included an examination of alternatives for cycling facilities on Beecroft Road and/or Doris Avenue. The alternatives are assessed based on the ability to address the identified deficiencies.

Stage 2 planning alternatives were identified and evaluated in 2017. These included:

- Selecting the appropriate type of cycling facility and street cross section for Beecroft Road and/or Doris Avenue;
- Selecting the preferred alignment for the cycling facility - Beecroft Road and/or Doris Avenue; and
- Selecting a preferred alternative for Yonge Street with no cycling facility, based on the identified need for reconstruction in the immediate term. Under all of the Stage 2 alternatives, Yonge Street will remain as six traffic lanes, as per the

existing condition. The median would be extended as per the approved Secondary Plan.

5.4.1 Planning Alternatives for Beecroft Road and/or Doris Avenue

The planning alternatives considered for Beecroft Road and/or Doris Avenue include 'Do Nothing', 'Enhance', 'Modify', and 'Transform', and are defined in the subsections below.

5.4.1.1 Do Nothing

For the 'Do Nothing' alternative, no changes will be made and both streets would be maintained in their present configuration. 'Do Nothing' does not provide multi-modal travel improvements through cycling facilities, wider sidewalks, or public realm improvements, beyond those that could be anticipated with future developments in adjacent parcels. Beecroft Road and Doris Avenue would continue to function as they do presently.

5.4.1.2 Enhance

The 'Enhance' alternative assumes that the existing roadway will be maintained in its present condition, and all improvements will be made within the existing curb-to-curb width. The number of travel lanes will be maintained when adding additional elements such as bike lanes in order to maintain traffic capacity. Due to limited available space on the roadway, bike lanes would be conventional painted lanes without a buffer and would be added in a "split pair" configuration (a northbound bike lane on Doris Avenue and a southbound bike lane on Beecroft Road). In typical midblock locations, the traffic lanes could be narrowed and the bike lane added by restriping the road. In locations with on-street parking, the parking would be located on the side of the street opposite the proposed bike lane (i.e. southbound on Doris Avenue, northbound on Beecroft Road), limiting conflicts and "dooring" risk. In some locations, the curb-to-curb width of the roadway (13.9 metres or less) is insufficient to accommodate the bike lane while maintaining traffic capacity, and curb realignment would be required.

5.4.1.3 Modify

The 'Modify' alternative re-balances the space dedicated to each mode in order to promote sustainable travel choices and safety in a cost-effective manner. It assumes that the majority of the existing roadway will be maintained as it is today, and localized improvements will be made to the existing curb-to-curb roadway section. Changes to travel lanes and the addition of cycle tracks will be accomplished through restriping, application of colour surface treatments, signage, and separation barriers such as flex-

bollards. No improvements would be made to pedestrian clearways or public realm features in either boulevard.

'Modify' assumes that the travel lane configuration of both Beecroft Road and Doris Avenue will be changed to the following:

- Beecroft Road: 1 northbound, 2 southbound
- Doris Avenue: 2 northbound, 1 southbound

This configuration provides an emphasis in vehicular capacity around the periphery of North York Centre, facilitating increased traffic flow northbound along Doris Avenue and southbound along Beecroft Road. The reduction in travel lanes from 4 to 3, along with the lane narrowing, provides space to incorporate the northbound and southbound cycle tracks. Left turn lanes will be maintained, where feasible, at intersections where they presently exist.

Limited curb reconstruction in certain locations is anticipated to in order to fit the cycle tracks through constrained areas and accommodate design details of the cycling infrastructure (e.g. ramped intersection approaches). Vehicle travel demand would be accommodated to the fullest extent possible by limiting lane reductions, supporting the role of Doris Avenue and Beecroft Road as the North York Centre ring road system.

'Modify' should be applied to both Beecroft Road and Doris Avenue due to the 'split-pair' travel lane reconfiguration.

5.4.1.4 Transform

The 'Transform' alternatives seek to re-balance the space dedicated to each mode in order to promote sustainable modes, user comfort, and safety. 'Transform' assumes that all or part of the roadway will be rebuilt. This will require changes to utilities, drainage, curbs, and roadway reconstruction. The cycling facility is a raised cycle track built at either the same elevation as the boulevard or an intermediate elevation between street curb and the boulevard. This provides both horizontal and vertical separation.

Public realm and pedestrian improvements are also components of 'Transform'. Pedestrian clearway widths are proposed to be widened to the minimum standard of 2.1 metres, providing additional space for pedestrians and mobility devices. The landscape buffer would be narrowed and would require at least partial reconstruction. This would provide the opportunity for street tree plantings and other public realm improvements such as seating and bike parking.

While vehicle traffic demand is accommodated to the fullest extent possible by limiting lane reductions, travel lane widths will be narrowed to discourage motorists from

speeding. Left turn lanes will be maintained, where feasible, at intersections where they presently exist.

Three ‘Transform’ alternatives were developed and are discussed below.

Transform 1

‘Transform 1’ includes 4 travel lanes with narrowed lane widths. The cycling facility is a raised unidirectional cycle track in the northbound and southbound directions (east and west boulevards, respectively).

Public realm improvements consist of a 1.6 metres continuous landscape buffer with street tree plantings and reconstructed pedestrian clearway built to the City’s minimum standard clearway width of 2.1 metres. The landscaped buffers provide a pleasant green environment for all street users, maintain the tree canopy, and visually soften the streetscape. In areas where the right-of-way is constrained, it is not feasible to provide the landscape buffer on one or both sides of the street.

Transform 1 can be applied to either Beecroft Road or Doris Avenue, or both streets, based on the balanced travel lane reconfiguration.

Transform 2

‘Transform 2’ includes 4 travel lanes with narrowed lane widths, pedestrian clearways widened to the minimum standard clearway width of 2.1 metres, and a 2.0 metre continuous landscape buffer with street tree plantings. The cycling facility is a raised bidirectional cycle path located in the west boulevard on Beecroft Road and/or the east boulevard of Doris Avenue. This placement is designed to reduce conflicts at intersections and property accesses – because there are few of either on the west side of Beecroft Road and the east side of Doris Avenue. Both service roads have been designed to limit access to the established neighborhoods and consequently have fewer access points on the outer perimeter (west side of Beecroft Road and east side of Doris Avenue). Therefore, there are few intersections the bidirectional cycle path must cross on the outer sides of these streets.

Nonetheless, it is noted that the positioning of a bidirectional cycling facility next to a bidirectional roadway increases risk exposure due to the greater number of potential conflicts. Cycling movements need to be protected at intersections through a dedicated signal phase using bike signal heads and crossride striping treatment. This dedicated phase could be the same phase as the pedestrian signals.

Cyclists who need to access Yonge Street would need to exit the cycle track on Doris Avenue or Beecroft Road, cross either street, and continue east/west to Yonge Street.

This complicates navigation and ease of use, and may encourage cyclists to use Yonge Street instead of Beecroft Road / Doris Avenue.

In areas where the right-of-way is constrained, it is not feasible to provide the landscape buffer on one or both sides of the street.

‘Transform 2’ can be applied to either Beecroft Road or Doris Avenue or both streets due to the balanced travel lane reconfiguration.

Transform 3

‘Transform 3’ represents a substantial departure from the existing design approach of both service roads. It includes 3 travel lanes, pedestrian clearways widened to 2.5 metres, and raised unidirectional cycle tracks in the northbound and southbound directions (east and west boulevards, respectively). Similar to Modify, the ‘Transform 3’ alternative includes three travel lanes in the following configuration, providing an emphasis in vehicular capacity around North York Centre that facilitates increased traffic flow northbound along Doris Avenue and southbound along Beecroft Road:

- Beecroft Road: 1 northbound, 2 southbound
- Doris Avenue: 2 northbound, 1 southbound

‘Transform 3’ must be applied both Beecroft Road and Doris Avenue due to the “split-pair” travel lane arrangement and the need to balance northbound and southbound traffic capacity.

Rather than adjacent to the curb, the raised cycle tracks are located so that the landscape buffer acts as a 2.0 metre separation buffer between the travel lanes and the cycle track, providing a pleasant environment for pedestrians and cyclists.

5.4.1.5 Choice of Alternatives to Carry Forward

Exhibit 5-12 summarizes the evaluation of the Stage 2 planning alternatives.

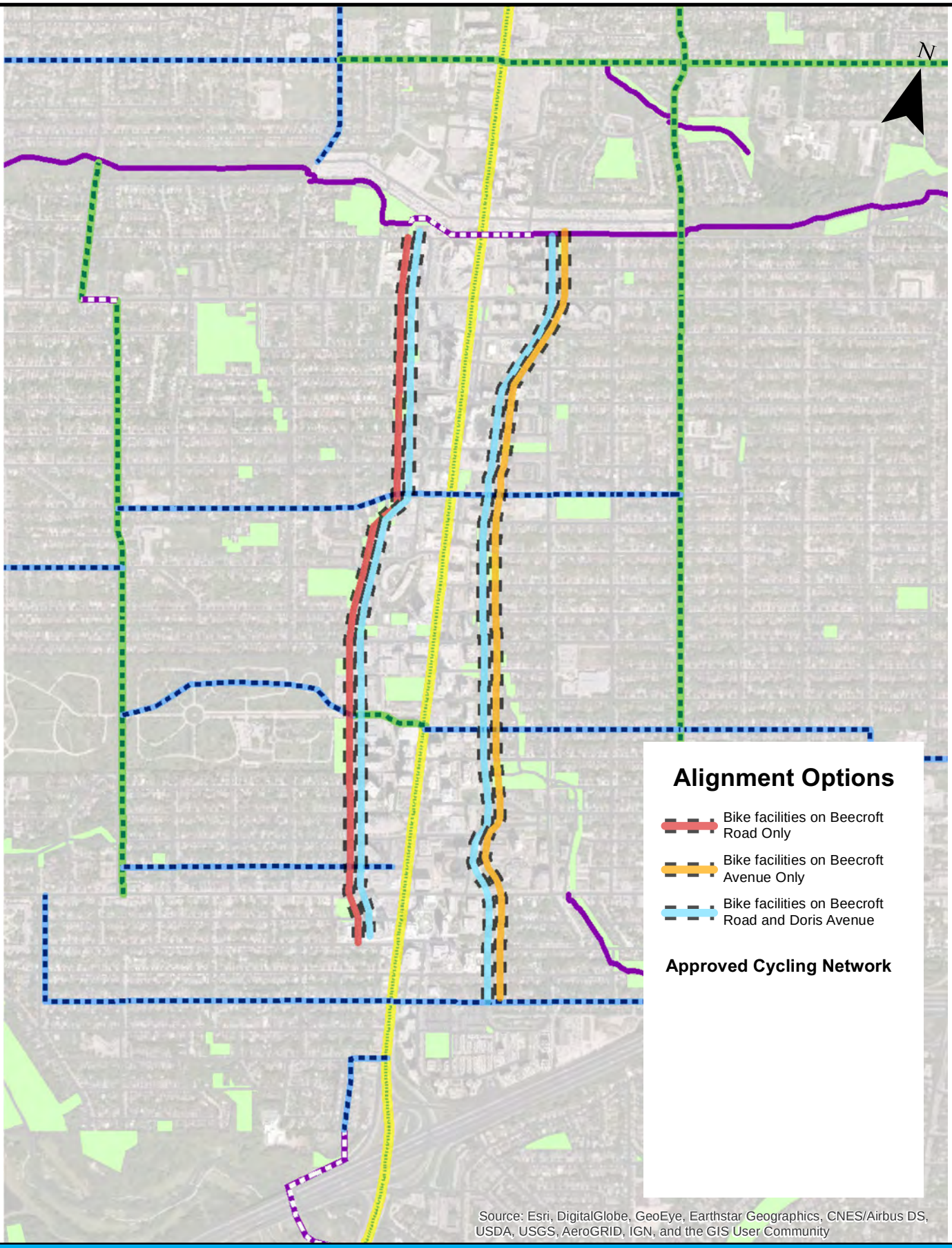
Exhibit 5-12: Summary of Evaluation of Planning Alternatives for Beecroft Road and/or Doris Avenue

Alternative	Carry Forward to Next Phase?	Key Components of the Rationale
1 – Do Nothing	No	• Does not resolve the identified problems and opportunities. • Does not promote balancing capacity for all modes of transportation. • Does not re-imagine Yonge Street to fulfil the City's vision as a major promenade or enhance the existing streetscape. • Does not support Yonge Street's role as a special public space.
2 – Enhance	No	• Does not resolve the identified problems and opportunities. • Only permits new elements on existing sidewalks, offering little opportunity to enhance the entire corridor and balance capacity for all modes of transportation. • Does not re-imagine Yonge Street to fulfil the City's vision as a major promenade or enhance the existing streetscape.
1 – Modify	No	• Lower anticipated capital and maintenance costs relative to the 'Transform' alternatives • Reduces traffic capacity on service roads
2 – Transform 1	Yes	• Does not reduce traffic capacity • Provides opportunities for wider sidewalks • Minimizes user conflicts and simplifies signaling requirements • Maintains parking conditions similar to existing. A net increase in off-peak on-street spaces is proposed for the Focus Study Area • Maintains curbside access similar to existing

Alternative	Carry Forward to Next Phase?	Key Components of the Rationale
3 – Transform 2	No	• Maintains parking conditions similar to existing. A net increase in off-peak on-street spaces is proposed for the Focus Study Area • Maintains curbside access similar to existing • The positioning of a bidirectional cycling facility next to a bidirectional roadway increases risk exposure due to the greater number of potential conflicts. Cycling movements need to be protected by signal phase using bike signals that could negatively impact traffic operations
4 – Transform 3	No	• Provides opportunities for wider sidewalks, place-making opportunities, and reduced noise • Provides the greatest potential for additional trees and environmental design features • Reduces traffic capacity on service roads

5.4.2 Planning Alternatives for Cycling Facility Alignment

During Stage 2 of the EA study, the Project Team undertook additional development of alternatives for the north-south cycling facility alignment beyond the Yonge Street option selected for **Transform Yonge**. Additional alignments are summarized in **Exhibit 5-13** and include Beecroft Road, Doris Avenue, or both Beecroft and Doris. None of the route alignments noted below are identified in the Cycling Network Plan.


N
Alignment Options
Bike facilities on Beecroft Road Only
Bike facilities on Beecroft Avenue Only
Bike facilities on Beecroft Road and Doris Avenue
Approved Cycling Network
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

5.4.2.1 Beecroft Road

A Beecroft Road cycling route would begin from the connection with the Finch Hydro Corridor Trail north of Hendon Avenue, south along Greenview Avenue through Finch Avenue West, and south along Beecroft Road to Poyntz Avenue where it would terminate. This route alignment has the following advantages:

- A future widening of Greenview Avenue is planned from Hendon Avenue to Finch Avenue West;
- A future extension of Beecroft Road is planned from Hendon Avenue to Drewry Avenue, providing the option of extending the cycling facility northward;
- Close proximity to civic facilities such as the North York Civic Centre and Public Library, the Douglas Snow Aquatic Centre, and the Toronto Centre for the Arts;
- An unconstrained right-of-way in comparison to Doris Avenue. City-owned lands, acquired for the extension of Beecroft Road from McBride Lane to Kempford Boulevard, are available adjacent to the road alignment and the right-of-way has not yet been established. The section south of Park Home Avenue is somewhat constrained due to the presence of a two-way left-turn lane, but mitigation options could be used to avoid property impacts.

Connection opportunities from Beecroft Road and Poyntz Avenue were considered:

- Poyntz Avenue from Beecroft Road to Yonge Street and opportunities to continue east along Anndale Avenue. The options were screened out due to the complex geometry and right turn volumes for eastbound Poyntz Avenue at Yonge Street. This would complicate accommodating any through movements for cyclists. Furthermore, it is uncertain whether Yonge Street south through the Highway 401 interchange will be the future route for accommodating a cycling facility, as it is subject to future study, design, and consultation with the Ontario Ministry of Transportation; and
- An on-street shared cycling route along Poyntz Avenue, Botham Street, Franklin Street, and Linelle Street to a potential multi-use pathway under Highway 401. This route is also subject to consultation with the Ontario Ministry of Transportation.

The difficulties at Poyntz Avenue are some of the key disadvantages of this alignment for the cycling facility. The other prime disadvantage is that there are few if any important destinations for cyclists along Beecroft; Beecroft represents a “back door” route to the commercial and institutional destinations, which are oriented primarily along Yonge Street.

5.4.2.2 Doris Avenue

A Doris Avenue cycling route would begin at a new connection to the Finch Hydro Corridor Cycling Trail near the intersection of Bishop Avenue and Kenneth Avenue. It

would then proceed south down Kenneth Avenue, through Finch Avenue East, continuing on Doris Avenue to Avondale Avenue. The advantage of this alignment is that the future realignment and extension of Doris Avenue from Greenfield Avenue south to Avondale Avenue (as part of the *Doris-Tradewind Environmental Assessment Study*) provides an opportunity to extend the cycling facility south of Sheppard Avenue East to Avondale Avenue, then along Avondale Avenue to Yonge Street.

Disadvantages of the Doris Avenue Option include:

- There are no plans to extend Doris Avenue north of Bishop Avenue, limiting the northern reach of the cycling facility;
- No vehicular through movements are permitted at the intersection of Avondale/Florence Avenues and Yonge Street. This potentially complicates bicyclist movements at the southern connection point with Yonge Street;
- The accommodation of an in-boulevard cycling facility impacts adjacent properties along the planned realignment of Doris Avenue. In particular, a vent from the underground parking facility at the Toronto Catholic School Board would need to be reconfigured, along with site grading in the area. Additional properties would also need to be acquired along Tradewind Avenue and Avondale Avenue; and
- The presence of a window street (Gladys Allison Place) within the right-of-way constrains the space available for adding the cycling facility without making substantial changes to the window street.

5.4.2.3 Both Beecroft Road and Doris Avenue

This option would consist of adding cycling facilities to both Beecroft Road and Doris Avenue, as described above. The advantage of this option is that it provides the greatest extent of cycling route coverage. Cycling facilities would be available both east and west of Yonge Street, reducing the need for cyclists to cross Yonge Street to access a cycling facility.

Disadvantages include:

- Cost of restriping or reconstructing two roadways, in addition to reconstructing Yonge Street; and
- Property impacts associated with the Doris Avenue alignment, as discussed above.

5.4.2.4 Choice of Alternatives to Carry Forward

Exhibit 5-14 summarizes the evaluation of the Stage 2 cycling facility alternatives.

Exhibit 5-14: Evaluation of Stage 2 Cycling Facility Alignments

Alternative	Carry Forward to Next Phase?	Key Components of the Rationale
1 – Beecroft Road	Yes	• Lower construction costs associated with construction on only one street
2 – Doris Avenue	No	• Impacts access to Claude Watson and Cardinal Carter Schools • Potential for substantial private property impacts and requirements
3 – Beecroft Road and Doris Avenue	No	• Greatest potential impacts to street trees • Potential for substantial private property impacts and requirements • High construction costs

5.4.3 Stage 2 Planning Alternatives for Yonge Street

5.4.3.1 Do Nothing

The 'Do Nothing' alternative would see Yonge Street reconstructed in its present format, and as redevelopment occurs then opportunities to improve the study area would be pursued as development applications are submitted to the City, consistent with the current design.

The existing inherent problems, which include inconsistent features such as sidewalks, pedestrian crossings and medians to lack of dedicated cycling facilities and concerns over traffic movement would persist. This alternative fails to create an attractive and consistent streetscape that will serve people of all ages as they travel in and around the area for work, school and leisure. This alternative was not carried forward for comparison purposes.

5.4.3.2 Enhance

The 'Enhance' alternative provides opportunities to enhance Yonge Street in strategic locations to create a more attractive and multimodal street. The improvements along Yonge Street such as bike facilities and wider pedestrian clearways would be minor improvements strategically added where space permits. There would be no relocation of the existing curbs.

5.4.4 Transportation Assessment

The transportation effects of the planning alternatives are considered below, in terms of accessibility and safety for walking, cycling, and vehicular movement.

5.4.4.1 Pedestrian Movement

The 'Do Nothing' would not improve pedestrian safety or capacity, except in terms of the extension of the landscaped median, as per the approved Secondary Plan.

Pedestrian safety and capacity on Yonge Street would be improved only in terms of a few minor initiatives as part of the 'Enhance' alternative:

- Extension of the landscaped median (as per the approved Secondary Plan);
- Narrower crossings north-south at local streets where possible;
- Pedestrian clearway widenings where the right-of-way permits; and
- Public realm improvements to be defined at the Detail Design stage.

5.4.4.2 Cycling

Neither of these two Stage 2 alternatives enhances the safety or capacity for cycling on Yonge Street. Cyclists would still have to share the curb lane with passenger vehicles, buses and trucks. Some less confident cyclists can be expected to ride on the sidewalk, increasing conflicts with pedestrians.

5.4.4.3 Transit

Neither of the alternatives would have a notable impact on surface transit operations of either GO Transit or the TTC. Both transit operators would continue to use the curb lanes of the six-lane Yonge Street for north/south travel.

5.4.4.4 Road Network

Neither of the alternatives would have a notable impact on traffic operations, as the six-lane cross-section of Yonge Street would be maintained for north/south travel.

5.4.5 Selection of the Stage 2 Preferred Alternative

Based on the technical evaluation and feedback from stakeholder agencies and the public, presented in **Exhibit 5-15**, the preferred Stage 2 option was Transform 1 on Beecroft Road and Enhance on Yonge Street.

The Transform 1 alternative on Beecroft Road includes:

Category / Criteria	Alternative 1 Beecroft Road	Alternative 2 Doris Avenue	Alternative 3 Beecroft Rd and Doris Ave
Cycling • Makes cycling a more attractive travel option • Consistency with City's approved Cycling Network 10-Year Plan • Connectivity for cyclists to lands adjacent to Yonge Street	• Does not provide north-south route option east of Yonge Street. • Provides connection between Finch Hydro Corridor Trail to the proposed future crossing of Highway 401 from Linelle Street and other existing north-south bike routes and trails.	• Does not provide north-south route option west of Yonge Street. • Indirect connection to the proposed future crossing of Highway 401.	• North-south cycling options both east and west of Yonge Street, with the most route options available to cyclists. • Provides connection between Finch Hydro Corridor Trail to the proposed future crossing of Highway 401 near Linelle Street and other existing north-south bike routes and trails.
Mobility and Congestion Management • Movement of people and goods • Transportation network capacity and operations • Surface transit (GO and TTC bus) operations • Emergency services	• Supports a shift in demand away from auto travel to bike travel.	• Impact on access to Claude Watson and Cardinal Carter schools. • Supports a shift in demand away from auto travel to bike travel.	• Impact on access to Claude Watson and Cardinal Carter schools. • Supports a shift in demand away from auto travel to bike travel.
Natural Environment • Impacts on vegetation communities and existing trees • Proposed street trees • Sustainability features and ability to respond to climate change	• Potential for tree impacts on one corridor.	• Potential for tree impacts on one corridor	• Potential for tree impacts on two corridors
Costs, feasibility, and impacts to private property	• Lower construction costs associated with construction on one street. • Few private property impacts and requirements.	• Lower construction costs associated with construction on one street. • Potential for substantial private property impacts and requirements.	• Higher construction costs associated with construction on two streets. • Potential for substantial private property impacts and requirements.
OVERALL RANKING			
ADVANCE?	✓ **Yes**. Alternative 1 avoids negative impacts on access to community facilities, is better aligned to the future connection across Highway 401, minimizes impacts to private property, and can be built at a lower cost.	X **No**. Alternative 2 would require substantial property impacts in constrained areas, particularly between Avondale and Greenfield Avenues.	X **No**. Alternative 3 would require the same potential impacts on Doris Ave and access to community facilities would be impacted. The project cost would be higher due to construction on two corridors.

The preliminary preferred Stage 2 alternative for cycling facilities is **Beecroft Road.** Beecroft can accommodate cycle tracks with fewer property impacts, less impact on traffic and better long-term potential connections to Steeles Avenue and across Highway 401.

LEGEND:

Greater Impact / Less Benefit → Less Impact / Most Benefit

- A four-lane cross section with the travel lanes measuring 3.0 metres, and curb lanes measuring 3.2 metres;
- A 1.8 metre landscaped buffer and street furnishing zone;
- A uni-directional 1.6 metre raised cycle track located immediately behind the curb on either side of Beecroft Road and accompanying 0.8 metre buffer from automobile vehicle lanes and 1.8 metres buffer from pedestrian clearway; and,
- A 2.1 metre pedestrian clearway (the unobstructed width available to pedestrians) on either side of Beecroft Road. Newer developments incorporate additional setbacks from the property line to the building face, much of which would appear to the user to be a wider sidewalk.

The preferred alignment alternative includes a dedicated cycling facility along Greenview Avenue north of Finch Avenue, in order to make a connection to the Finch Hydro Corridor Multi-use Trail north of Hendon Avenue. On the south, the cycling facilities will terminate at Poyntz Avenue.

5.5 Evaluation of Stage 1 and Stage 2 Preferred Alternatives

In this section, the preferred alternatives from Stage 1 and Stage 2 are compared and evaluated. These are:

- Stage 1: Transform Yonge (cycle tracks and reduction to four traffic lanes on Yonge Street)
- Stage 2: Transform Beecroft and Enhance Yonge (cycle tracks on Beecroft Road, minor improvements to Yonge Street where possible within the right-of-way).

The alternatives are assessed for each aspect of transportation and their ability to achieve the project goals.

5.5.1 Pedestrian Movement

5.5.1.1 Pedestrian Clearway

Pedestrian clearway is the space available for pedestrians that is free of obstructions such as benches, waste bins, planters, bike racks, and a-frame signs. Yonge Street in North York Centre is an area where there are high pedestrian volumes due to its nature as a main promenade and pedestrian travel to and from TTC subway stations. Pedestrians take up space, and as demand increases, user conflicts can occur between different user types. There are opportunities for street tree planting / landscaping along the pedestrian clearway to enhance the surroundings for users of the sidewalk. The typical space required by user type is shown in **Exhibit 5-16**.

Exhibit 5-16: Example Widths of Different Pedestrian Types

The Transform Beecroft / Enhance Yonge alternative provides widened pedestrian clearways on Beecroft Road as a result of boulevard reconstruction. However, Yonge Street is considered a priority corridor for pedestrian movement, and thus the expansion of pedestrian space under the Transform Yonge alternative has a much greater benefit. Beecroft Road, in contrast, acts as a service road on the perimeter of North York Centre, with little pedestrian activity currently or projected in the future.

Additional space for pedestrian movement in setbacks is secured through the development review process, however this space is not always available for pedestrian movement (e.g. used for patios) and is not consider part of the pedestrian clearway. The typical widths available to pedestrians for each alternative is summarized in **Exhibit 5-17**.

Exhibit 5-17: Comparison of Projected Pedestrian Space

Stage 1: Transform Yonge			Stage 2: Transform Beecroft and Enhance Yonge	
Yonge Street (South of Sheppard Avenue)	Yonge Street (North of Sheppard Avenue)	Beecroft Road	Yonge Street (Avondale Avenue to Bishop/Hendon Avenues)	Beecroft Road
2.55 metres	3.3 metres	1.5 metres to 1.8 metres (no change)	2.1 metres	2.1 metres

Both alternatives are comparable in providing for public realm improvements to the Yonge Street corridor in terms of reconstruction of areas with uneven pavement and utility cuts. However, Stage 2 offers only very limited opportunity to make the pedestrian experience more consistent from block to block on Yonge Street.

In conclusion, **Transform Yonge** is preferred as it provides more space in the boulevard for public realm improvements and pedestrian movement, where it is needed – on the active space of Yonge Street. Beecroft Road, with very few active uses existing or planned on the west side, is not projected to have the same level of pedestrian activity as Yonge Street, where the mix of employment, retail, restaurants and residential, together with the subway stations, creates a very active street. Transform Yonge is preferred because:

- Greater pedestrian clearway space will better serve people accessing local businesses, TTC subway stations, and TTC and GO Transit buses; and
- Provides the best support for vibrancy through additional space for public realm enhancements, streetscaping, and amenities.

5.5.1.2 Crossing Opportunities

Pedestrian crossing opportunities are important for streets of high civic importance such as Yonge Street, as they provide more route options, greater ease of use, and improved safety for vulnerable pedestrians such as seniors and children.

Separations between signalized crossing opportunities were assessed and gaps identified along the Yonge Street corridor. The following sections were identified as areas where the distance can be decreased by the additions traffic control signals:

- Kempford Boulevard to Churchill Avenue (360 metres)
- Churchill Avenue to Park Home Avenue (510 metres)

The two alternatives are comparable as they provide for the addition of full signals to address long gaps between crossing opportunities at:

- Yonge Street at Ellerslie Avenue
- Yonge Street at Horsham Avenue

5.5.1.3 Landscaped Median

Yonge Street features a landscaped median from Park Home/Empress Avenue to Greenfield Avenue. Enhancing and lengthening the median has been identified by the City as an important streetscape element in the North York Centre vision; this is identified in the North York Centre Secondary Plan. During the EA process, stakeholders raised questions about the median, such as why it is necessary and what effect it would have if it were removed. Considerable support for the presence and extension of the median was also expressed.

The median performs important functions, by:

- Improving safety. Based on collision data from the initial assessment (using 2010-2014 data), the average collision rate was 2.18 collisions per million vehicle-kilometres for segments of Yonge Street from Finch Avenue to Sheppard Avenue without a landscaped median, and 0.83 collisions per million vehicle-kilometres for segments with the median;
- Allowing for consistent alignment of travel lanes. Without the median, the lanes would have to shift to either side before and after intersections to accommodate the left turn lanes. Alternatively, a continuous centre left-turn lane could be used. Either of these options would result in an unattractive streetscape;
- Providing a prominent location for public art and plantings, a relevant consideration in this civically important section of Yonge Street, adjacent to North York Civic Centre; and
- Facilitating effective traffic flow, by limiting the number of locations where left turns to and from minor streets can be made.

The Stage 1 and 2 alternatives are comparable, as a consistent 4.2 to 4.5 metre wide landscaped median is a program element of both.

5.5.2 Cycling

The Stage 1 and 2 alternatives compare as follows, with respect to the goals of providing safe, secure and effective cycling connections that serve potential users to, from and within the Focus Study Area:

- Network connectivity: both alternatives offer the potential to connect to the Finch Recreational Trail north of Hendon Avenue, and both offer the potential to extend the cycling facility north, though in the case of Beecroft Road, this would be a longer-term potential, requiring the extension of Beecroft Road northerly. On the south, the routing for any connection across Highway 401 has not been determined. On the basis of the ease of the northerly extension, Transform Yonge is preferred for this criterion;
- Directness of routing / proximity to origins and destinations: Yonge Street is the mixed-use centre of North York Centre; there is no commercial activity on Beecroft Road. Yonge Street is a direct route to and from origins and destinations for cyclists; a cycling facility on Beecroft Road would require a detour to Yonge for most cycling trips, indicating that the bike lanes on Beecroft Road would be less well-used than the Yonge Street cycle tracks. Transform Yonge, with cycle tracks on Yonge Street, is clearly preferable;
- Safety and security of facility for cyclists: the preferred bike facility design for Stage 1 is physically separated cycle tracks. For Stage 2, the preferred design is dedicated bike lanes, offering a lower degree of physical separation from traffic. Also, under the Stage 2 alternative, some cycling trips are still likely to use Yonge Street because of the detour needed from the Beecroft Road bike lanes, resulting in a lower degree of safety for cyclists. Stage 1 is preferred for this criterion for these reasons.

Transform Yonge, including cycle tracks, is the preferred alternative for accommodation of cyclists, offering the greatest potential to divert trips to this mode from auto.

5.5.3 Traffic

The analysis of traffic conditions under the Stage 1 and Stage 2 alternatives has been based primarily on a computerized simulation of projected future traffic volumes. Weekday peak period conditions have been modelled, reflecting the observed pattern of demand in this area – weekday morning and afternoon peaks have the highest demands over the week. Current conditions have been modelled as a baseline, and horizons 2021 and 2031 assessed in terms of performance of the alternatives. Performance measures have been derived and interpreted from the model results, to reflect elements that can differentiate performance of the alternatives in a busy urban network.

The principle question of the scenario modelling and results comparisons discussed below is whether or not Yonge Street can function acceptably in a 4-lane configuration between Sheppard and Finch Avenues. The performance of Yonge Street, the service roads (Beecroft Road and Doris Avenue) and other arterial and collector streets in the study area has also been assessed in the model.

The results for both the Stage 1 and Stage 2 analyses are presented below.

It should be noted that two rounds of analysis were conducted for the Transform Yonge alternative: first, as part of the initial Stage 1 analyses, and second, following the decision at City Council to further assess traffic and transit operations, focusing particularly on TTC operations at the Finch Station Bus Terminal and Yonge/Sheppard Subway Station bus operations, and on parallel arterial streets to Yonge. Both rounds of analysis are presented below.

5.5.3.1 Traffic Analysis Summary: Initial Microsimulation

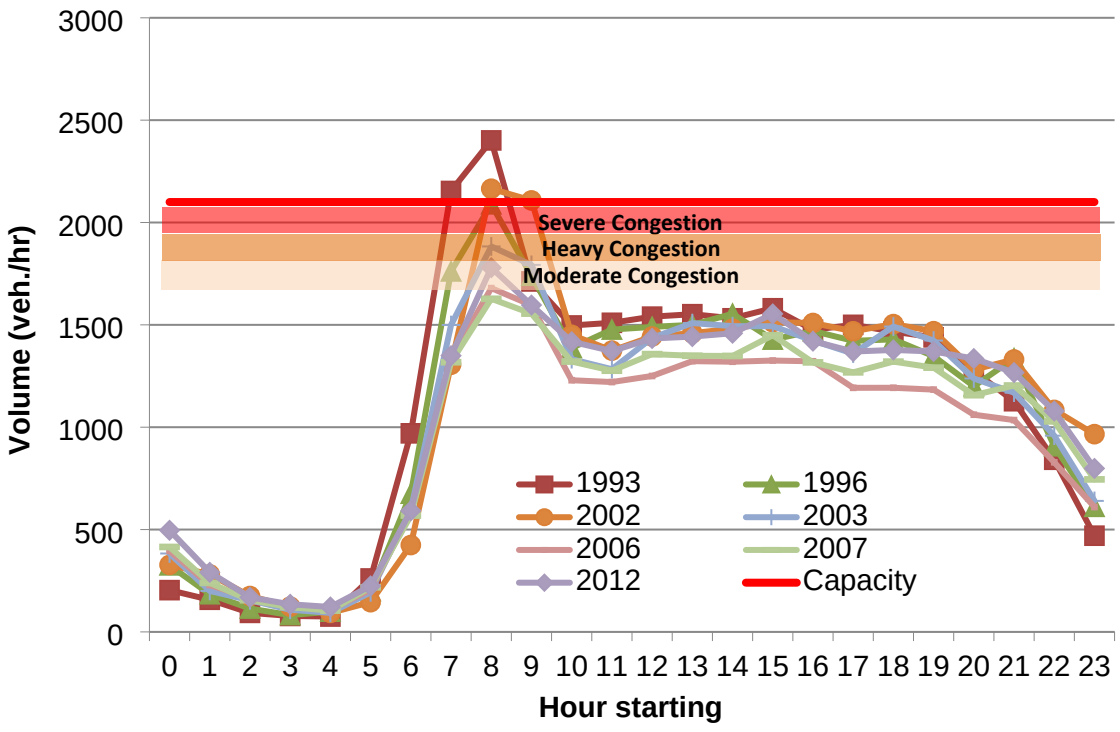
<u>This section addresses the first round of microsimulation analysis, comparing the Stage 1 and Stage 2 alternatives.</u>

The model is a “meso/microsimulation” model, which models auto traffic, buses, pedestrians and cyclists at an individual level, and includes parameters to reflect the range of behaviours in each group. Combining this with a detailed representation of the road network and traffic signal operations, it represents traffic and transportation operations to a level of accuracy that is acceptable for long range modelling analysis and planning studies. Detailed microsimulation was undertaken for the area between

Beecroft Road and Doris Avenue. The slightly less detailed mesosimulation was completed for the entire study area, from Steeles Avenue to Wilson Avenue/York Mills Road, and from Bathurst Street to Bayview Avenue; this allowed for traffic to divert to other streets to balance demands and travel times across the network, as would be expected to occur in reality. All arterials and collector roads were included throughout the study area; local roads were included only in North York Centre. The model was calibrated to existing conditions, and then the effects of approved development across the entire Greater Toronto and Hamilton Area were applied to forecast future travel demands. Adjustments were made to future mode splits, to reflect the attractiveness of dedicated cycling facilities for cyclists.

Weekday morning and afternoon peak hours were modelled – the periods of highest demand on the network. The pattern of traffic volumes over the 24-hour day in this area were examined. They indicate that over the vast majority of the day, volume is substantially below capacity on a link basis. This is illustrated graphically in **Exhibit 5-18** below.

Exhibit 5-18: Traffic Voumes on Southbound Yonge Street North of Churchill Avenue



Stage 1 Scenarios

The scenarios analyzed for Stage 1 included:

a) **Do Nothing**, which models the effect of the growth in traffic on the existing and currently approved road network. The approved road network includes the realignment and extension of Doris Avenue to Avondale Avenue (the Doris-Tradewind Connection) by the 2031 horizon year; this was not included for 2021 as it is not projected to be complete by that date; and

b) **Transform Yonge**, which models the effect of a reduction in lanes from 6 to 4 on Yonge Street from Sheppard Avenue to Finch Avenue. This scenario also includes 2021 and 2031 pedestrian volumes at key intersections and 2031 cyclists using the cycle tracks proposed on Yonge Street.

Stage 2 Scenarios

The scenarios analyzed for Stage 2 included:

a) **Do Nothing**, which has the same characteristics as the Stage 1 Do Nothing scenario; and

b) **Worst Case**, reflecting the removal of a traffic lane from both Beecroft Road and Doris Avenue. (This was conceptualized at the beginning of Stage 2; in the end, no lane removals were recommended).

In each of these Stage 2 scenarios, Yonge Street remains as 6 lanes.

Results Summary

First and foremost, it is important to understand that traffic volumes are projected to increase in the study area due to planned growth across the region by approximately 3% and 9% to 2021 and 2031, respectively, during the PM peak period. This growth in demand and impact to traffic flow will occur regardless of the alternative implemented. As discussed below, much of the change in traffic operations relates to this growth, not due to the introduction of a new concept for Yonge Street or Beecroft Road.

The magnitude of the impact for Transform Yonge indicates that traffic operations will be manageable, with marginal increases in travel time and some increases in queuing. The detailed results are shown in **Appendix G**. Key performance measures are as follows:

- Travel time changes are minimal – generally under 1 minute for trips on Yonge Street (from Wilson Avenue to Steeles Avenue) or on Doris Avenue or Beecroft Road (from Sheppard Avenue to Finch Avenue);

- Average speed changes are minimal – 1 or 2 sec/km; and
- Queuing – queuing is the factor which shows the most noticeable change. Some increase is projected at Sheppard Avenue and Park Home/Empress Avenue relative to the “Do Nothing’ conditions at the two horizons. Please note that the queues reported are the 95th percentile probability, and are thus expected to be of acceptable lengths for 19 observations of typical conditions out of 20 (i.e. once in 20 queues, the length may exceed this number). Queue lengths are projected to be manageable under Transform Yonge – they are not expected to reach back to the adjacent signalized intersection, beyond the level seen today. That is an appropriate measure for a dense urban network of streets, such as is present in North York Centre.

The traffic modelling results show that Transform Yonge would have generally less impact on traffic operations than the Worst Case Stage 2 alternative (3 lanes on each of Doris Avenue and Beecroft Road, with bike lanes on both streets). The preferred Stage 2 alternative, ‘Transform Beecroft’ and ‘Enhance Yonge’, is equal to the ‘Do Nothing’ analysis scenario, and has few discernible traffic impacts. Thus Stage 1 is only marginally worse than the Stage 2 alternative.

Traffic demand on Yonge Street during the weekday peak periods include a significant proportion of volumes travelling to/from York Region. Yonge Street is used as a link to the Finch TTC subway station and park and ride facility, and to Highway 401. Using volume and turning movement counts at Steeles Avenue as an indicator of southbound traffic approaching the study area from York Region, and northbound traffic departing the study area for York Region. Approximately 74% of traffic at this point on Yonge Street originates from York Region during the weekday morning peak period and approximately 73% of traffic is destined to York Region during the weekday afternoon peak period.

Given that a majority of the traffic on Yonge Street in this area originates in the Regional Municipality of York (York Region), it is concluded that longer distance regional trips can be served through parallel corridors. This data also indicates that trips of longer lengths could use parallel streets, namely Bayview Avenue and Bathurst Street.

Lane Utilization

A comparison of volumes on parallel streets can serve as a useful indicator of how well the available lanes are being used in the area, and what is possible in terms of throughput. Yonge Street, in the vicinity of Sheppard Avenue, carries a maximum of 1,571 southbound and 1,546 northbound vehicles, in 3 lanes per direction. This is equivalent to approximately 500 vehicles per lane. Bayview Avenue, in the vicinity of Sheppard Avenue, carries 1,439 southbound and 1,419 northbound vehicles, in 2 lanes per direction. This is equivalent to a throughput of approximately 700 vehicles per

lane. Thus, there is a certain amount of inefficiency in the utilization of the lanes on Yonge Street. This demonstrates that by improving operations on Yonge Street, most of the existing traffic could be accommodated in 2 lanes per direction. Given that some diversion to Beecroft Road and Doris Avenue will occur, this is a strong indication that the current (and future) traffic volumes could be accommodated with a 4-lane cross-section on Yonge Street.

Applying the projected 2031 Yonge Street traffic volumes (shown in **Appendix G**) to this issue of utilization yields the same conclusion – Yonge Street can accommodate the projected volumes in 2 lanes per direction.

5.5.3.2 Second Microsimulation Analysis to Address TTC Concerns

An update of the Aimsun analysis was completed to address concerns expressed by the TTC with respect to their operations in the vicinity of the Finch Subway Station Bus Terminal and more broadly across the project study area, from Bathurst Street to Bayview Avenue. The TTC concerns related to traffic impacts on buses entering and leaving the Finch Terminal, and impacts from potential diversion of traffic away from Yonge Street to parallel streets, which was seen as possibly affecting bus route reliability.

This assessment addressed weekday AM peak hour conditions, using 2016 as a baseline but then projecting conditions in 2031. For 2031, four scenarios were tested: Do-Nothing (i.e. Yonge Street 6 lanes); Transform Yonge 1, reducing Yonge Street to 4 lanes from Sheppard Avenue to Finch Avenue; Transform Yonge 2, adding the extension of Beecroft Road to Drewry Avenue; and Transform Yonge 3, which included a cul-de-sac on Hendon Avenue west of Beecroft Road, as well as the extension of Beecroft Road to Drewry Avenue. The detailed report is provided in **Appendix G**.

Key findings from the analysis are as follows:

- The growth between 2016 and 2031 in the total number of trips using the network during the peak period is approximately 7% for the Do-Nothing scenario and 9% for the Transform Yonge scenarios;
- Generally speaking, the traffic impact, across the study area network, of implementing the Transform Yonge scenarios in 2031 is noticeably less than the impact associated with traffic growth between 2016 and 2031;
- At the network level, there are no significant differences between three 2031 Transform Yonge scenarios; and
- An increase in traffic volume is observed on most north-south corridors between 2016 and 2031 Do-Nothing. In the Transform Yonge scenarios, the simulated traffic volume on Yonge Street increases relative to the Do-Nothing, and those on Doris Avenue and Beecroft Road increase. The change on other parallel streets (for example Bathurst Street and Bayview

Avenue) is negligible, indicating that the configuration of Transform Yonge has very little impact outside the Focus Study Area.

The following findings from the Transform Yonge scenarios are relative to the 2031 Do-Nothing scenario:

- Travel time changes on Yonge Street resulting from Transform Yonge are minimal - ranging from zero to 0.8 minutes;
- Travel time changes on other roads are also small. The largest increase is southbound on Doris Avenue, showing a range of increases from 1.2 to 1.9 minutes;
- Impacts on TTC bus services have been assessed:
    - Factors such as average speed and delay do not change relative to the do-nothing scenario;
    - At TTC terminal access points, bus level of service remains the same, generally. The westbound right turn exit from the Pemberton access north of Finch shows an increase in delay, which is largely mitigated if Beecroft Road is extended; and
    - Travel time and delay on Yonge Street do not increase notably relative to the Do-Nothing scenario; some relative improvement is forecast for Scenarios 2 and 3.
- Projections of road section level of service show that little change is expected on Yonge (and the change is primarily outside the Transform Yonge area, suggesting the change is due primarily to growth). Little change is also projected on Beecroft Road. Some segments of Doris Avenue are projected to be at capacity southbound, on an intermittent basis;
- Intersection levels of services are not projected to worsen overall. Only the intersection of Yonge Street at Elmhurst Avenue/Greenfield Avenue is expected to reach LOS 'E' due to the removal of northbound left-turn movement at Yonge Street/Sheppard Avenue;
- Regarding queue lengths, the only locations where large increases are projected are at the intersections of Yonge Street at Drewry Avenue, Elmhurst Avenue/Greenfield Avenue, and Florence Avenue/Avondale Avenue;
- Traffic infiltration to adjacent neighbourhoods is projected to be minor. In some cases, the volumes decrease in the Transform Yonge scenarios; and
- Impacts have been assessed for the Highway 401 ramps, mainline and ramp terminals. Volume changes on the Yonge Street ramps are not projected to increase beyond the levels seen under the Do-Nothing scenario.

Impact on TTC Bus Operations

The TTC was interested in the impact of alternative future scenarios for Yonge Street on its bus operations, particularly in connection with the Finch and Sheppard Terminals. The performance outputs presented below and in **Appendix G** include overall network

statistics, delay and level-of-service at intersections and access locations, and delay and travel times along Yonge Street.

Exhibit 5-19 summarizes the network statistics for TTC vehicles during the AM peak period. Over the existing 2016 three-hour morning peak period, a total of 895 buses operated within the Focus Study Area, and 6 additional buses are waiting to enter at the end of the peak period (more likely due to schedule than to any significant delay). The average speed is 18 km/h, which includes/accounts for the dwell time at stops. The total number of TTC buses in 2031 increases to 1,180 vehicles over the three-hour period, which is consistent with the assumption of an annual growth rate of 2% per year. The 2% growth per year is applied to all existing TTC routes, implemented in the models as a reduction in headway (and thus an increase in service frequency). No new routes are added. The average speed drops to 13 km/h for the 2031 Do-Nothing and Scenario 1 and to 14 km/h in Scenarios 2 and 3. The changes in performance are due to a combination of increase in the volume of buses, and impacts from traffic growth. The traffic growth impacts are concluded to be unrelated to the introduction of the Transform Yonge options, as the results for the three Transform scenarios are largely better than the Do-Nothing.

Exhibit 5-19: Network performance for TTC buses – AM peak period

Over the 3 hours	2016 Simulated	2031 Do-Nothing	2031 Scenario 1	2031 Scenario 2	2031 Scenario 3
Average number of vehicles sitting in a queue	11	24	24	24	23
Total veh-hrs travelled*	66	118	118	118	116
Average speed (km/h)	18	13	13	14	14
Average delay (sec/km)	109	175	174	166	162
** Total veh-hrs travelled does not include time spent in the virtual queue*					

Exhibit 5-20 summarizes the simulated AM peak hour delay and the corresponding level-of-service of TTC buses around the Finch Terminal and the Sheppard-Yonge Station. Again, little impact is observed due to Transform Yonge relative to the future Do-Nothing.

Exhibit 5-20: TTC bus level-of-service for relevant approaches at TTC access points

		2016 Simulated	2031 Do-Nothing	2031 Scenario 1	2031 Scenario 2	2031 Scenario 3
Yonge Street at Bishop Avenue/Hendon Avenue (signalized)						
SBL	Delay (sec)	36	47	56	49	49
	Level-of-service (LOS)	**D**	**D**	**E**	**D**	**D**
WBR	Delay (sec)	22	37	31	28	46
	Level-of-service (LOS)	**C**	**D**	**D**	**C**	**D**
TTC access south side of Bishop Avenue (unsignalized)						
NBL	Delay (sec)	142	137	59	49	56
	Level-of-service (LOS)	**F**	**F**	**F**	**E**	**F**
EBR	Delay (sec)	6	7	6	6	6
	Level-of-service (LOS)	**A**	**A**	**A**	**A**	**A**
TTC access on Pemberton Avenue (unsignalized)						
WBR	Delay (sec)	25	25	39	29	28
	Level-of-service (LOS)	**C**	**C**	**D**	**C**	**C**
TTC access north side of Finch Avenue (signalized)						
EBL **(Unsignalized)**	Delay (sec)	28	56	54	50	46
	Level-of-service (LOS)	**D**	**F**	**F**	**E**	**E**

		2016 Simulated	2031 Do-Nothing	2031 Scenario 1	2031 Scenario 2	2031 Scenario 3
WBR	Delay (sec)	13	35	42	36	33
	Level-of-service (LOS)	**B**	**C**	**D**	**D**	**C**
SBL	Delay (sec)	47	42	44	44	43
	Level-of-service (LOS)	**D**	**D**	**D**	**D**	**D**
SBR	Delay (sec)	26	82	64	63	61
	Level-of-service (LOS)	**C**	**F**	**E**	**E**	**E**
TTC access north side of Sheppard Avenue (unsignalized)						
EBL	Delay (sec)	9	13	10	9	10
	Level-of-service (LOS)	**A**	**B**	**A**	**A**	**A**
WBR	Delay (sec)	9	9	12	13	12
	Level-of-service (LOS)	**A**	**A**	**B**	**B**	**B**
SBL	Delay (sec)	20	34	22	25	25
	Level-of-service (LOS)	**C**	**D**	**C**	**D**	**D**
SBR	Delay (sec)	16	21	19	18	21
	Level-of-service (LOS)	**C**	**C**	**C**	**C**	**C**

The simulated travel times and delays are summarized for TTC buses serving Yonge Street in **Exhibit 5-21**. The delay time includes control delay and queue delay. The travel time includes the delay time, running time, and any dwell time at stops. Delay times are broken out in **Exhibit 5-22**.

Data is only summarized north of Bishop Avenue/Hendon Avenue as only one bus route runs south of Finch Avenue with a frequency of two buses per hour. There is an overall increase in travel time and delay across all 2031 scenarios when compared to existing 2016 conditions. The increases are expected given the growth in transit services along the Yonge Street corridor and an increase in GO Transit dwell time at stops. Scenario 3 has the shortest transit travel time and transit delay in the southbound direction and has similar performance in the northbound direction as Scenario 2. Transit performance in Scenario 1 is similar to the Do-Nothing scenario.

Exhibit 5-21: Travel time for TTC buses on Yonge Street between Bishop Avenue/Hendon Avenue and Steeles Avenue – AM peak hour

Simulated travel times (min) for TTC buses										
	2016 Simulated		2031 Do-Nothing		2031 Scenario 1		2031 Scenario 2		2031 Scenario 3	
Section	**NB**	**SB**	**NB**	**SB**	**NB**	**SB**	**NB**	**SB**	**NB**	**SB**
Bishop Ave/Hendon Ave to Finch GO Terminal	0.3	0.8	0.4	0.8	0.4	0.9	0.4	0.8	0.4	0.8
Finch GO Terminal to Turnberry Ct	0.6	0.3	0.5	0.4	0.5	0.4	0.6	0.4	0.5	0.4
Turnberry Ct to Drewry Ave/Cummer Ave	1.2	0.8	1.5	1.0	1.4	1.0	1.3	1.1	1.3	1.1
Drewry Ave/Cummer Ave to Patricia Ave	0.8	1.8	0.9	2.7	0.9	2.9	0.8	2.9	0.9	2.4
Patricia Ave to Moore Park Ave/Madawaska Ave	0.9	0.8	1.0	0.9	1.0	0.9	1.0	0.9	1.0	0.9
Moore Park Ave/Madawaska Ave to Athabaska Ave	0.6	0.8	0.7	0.9	0.6	0.9	0.6	0.9	0.6	0.9
Athabaska Ave to Steeles Ave	2.4	1.3	3.5	1.4	3.5	1.4	3.0	1.4	3.2	1.4
Total travel time (min)	**6.8**	**6.6**	**8.5**	**8.1**	**8.3**	**8.4**	**7.8**	**8.1**	**7.9**	**7.7**
Difference			1.7 (+25 %)	1.5 (+23 %)	1.5 (+22 %)	1.8 (+27 %)	1.0 (+15 %)	1.5 (+23 %)	1.1 (+16 %)	1.1 (+17 %)
Average speed (km/hr)	16.2	16.7	12.9	13.6	13.3	13.1	14.1	13.6	13.9	14.3

Exhibit 5-22: Delay time for TTC buses on Yonge Street between Bishop Avenue/Hendon Avenue and Steeles Avenue – AM peak hour

Simulated delay times (min) for TTC buses										
	2016 Simulated		2031 Do-Nothing		2031 Scenario 1		2031 Scenario 2		2031 Scenario 3	
Section	**NB**	**SB**	**NB**	**SB**	**NB**	**SB**	**NB**	**SB**	**NB**	**SB**
Bishop Ave/Hendon Ave to Finch GO Terminal	0.1	0.7	0.1	0.7	0.1	0.8	0.1	0.7	0.1	0.7
Finch GO Terminal to Turnberry Ct	0.3	0.0	0.3	0.1	0.3	0.1	0.3	0.1	0.3	0.1
Turnberry Ct to Drewry Ave/Cummer Ave	0.4	0.4	0.6	0.6	0.5	0.7	0.5	0.7	0.5	0.8
Drewry Ave/Cummer Ave to Patricia Ave	0.2	0.7	0.3	1.6	0.2	1.8	0.2	1.8	0.2	1.3
Patricia Ave to Moore Park Ave/Madawaska Ave	0.2	0.3	0.3	0.4	0.3	0.3	0.3	0.4	0.3	0.4
Moore Park Ave/Madawaska Ave to Athabaska Ave	0.3	0.3	0.3	0.4	0.2	0.4	0.2	0.4	0.3	0.4
Athabaska Ave to Steeles Ave	1.6	0.4	2.6	0.4	2.6	0.4	2.1	0.4	2.3	0.4
Total delay time (min)	**3.1**	**2.4**	**4.5**	**3.9**	**4.3**	**4.1**	**3.8**	**4.0**	**4.0**	**3.5**
Difference			1.4 (+45 %)	1.5 (+63 %)	1.2 (+39 %)	1.7 (+71 %)	0.7 (+23 %)	1.6 (+67 %)	0.9 (+29 %)	1.1 (+46 %)

Conclusions

The enhanced Aimsun modelling indicated that the impacts of Transform Yonge, relative to the Do-Nothing 2031 case, are minimal.

Transform Yonge 2 (which includes the extension of Beecroft Road to Drewry Avenue) and Transform Yonge 3 (which included a cul-de-sac on Hendon Avenue west of Beecroft Road, as well as the extension of Beecroft Road to Drewry Avenue) provided

the best results in terms of traffic and transit operations. The difference between the two scenarios is marginal.

The effects of Transform Yonge on TTC operations are also small. Mitigating measures are defined to address these effects.

For these reasons, Transform Yonge is the preferred option. The extension of Beecroft Road north to Drewry Avenue will assist in maintaining effective traffic operations on Yonge Street, particularly in the vicinity of Finch Station.

5.5.4 Transit

The Stage 1 (Transform Yonge) alternative is projected to have minimal impacts on bus operations, based on the detailed traffic modelling. The modelling has identified four issues for further consideration:

- Signal optimization along Yonge Street to allocate more green time to north-south on Yonge Street;
- Signal optimization at the intersection of Yonge Street/Finch Avenue to allocate more green time to the east-west movements on Finch Street;
- Conversion of the existing southbound HOV lane at Yonge Street/Bishop Avenue to dedicated transit lane with protected transit phase, allowing left turns onto Bishop Avenue in a dedicated phase; and
- Relocation of the northbound bus bay at Yonge Street/Sheppard Avenue to the far side of the intersection.

The proposal to reduce the number of GO Transit bus stops on Yonge Street will also mitigate delays to traffic and transit to some degree.

The Stage 2 alternative would have little to no effect on bus operations on Yonge Street. It would not support the goal of increasing ridership on the subway system, and thus would not result in a balanced multimodal transportation demand pattern in this area. For this latter reason, Stage 1 is preferred.

5.6 Conclusions

The comparison of the Stage 1 (Transform Yonge) preferred alternative to Stage 2 (Transform Beecroft and Enhance Yonge) shows that Transform Yonge has marginal negative implications for traffic operations. This alternative has benefits in terms of addressing all of the goals identified in the Problem and Opportunity Statement – including enhancement to the public realm, provision of safe cycling infrastructure on Yonge Street, and expansion of the pedestrian environment both along and crossing Yonge Street. It would also result in more controlled traffic flows. Impacts on surface transit are projected to be minimal; the subway lines will benefit from additional ridership

with enhanced pedestrian and cycling connections. Businesses along Yonge are expected to benefit from a more active pedestrian-oriented environment, and there will be additional space for civic events.

The Stage 2 alternative, by contrast, has even less impact on traffic, but also very few benefits. It would create safe cycling infrastructure, but not on the street where high cycling demands would be expected. This alternative would not support the project goals as identified in the Problem and Opportunity Statement.

Thus Stage 1 (Transform Yonge) is concluded to be the overall preferred project alternative.